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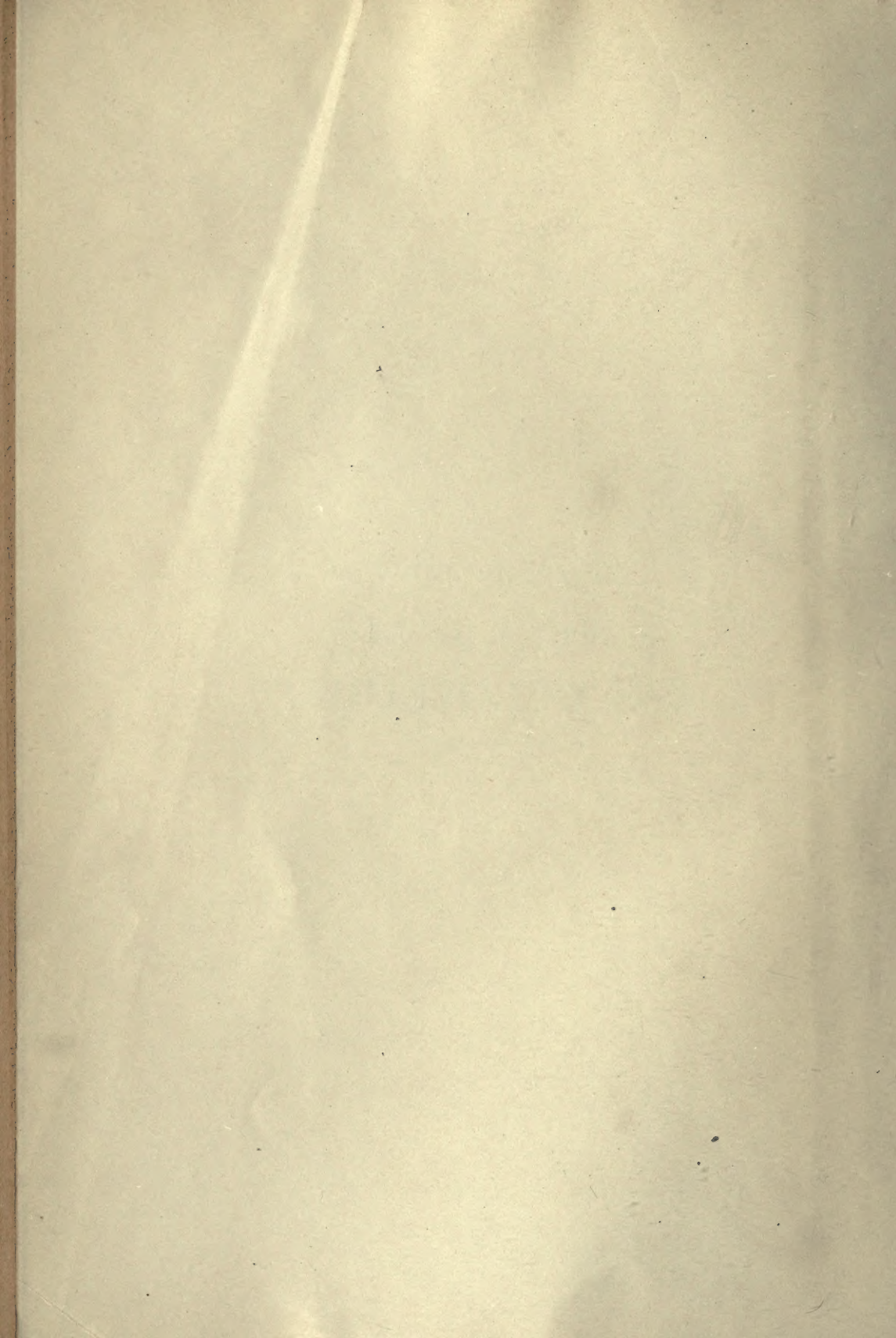



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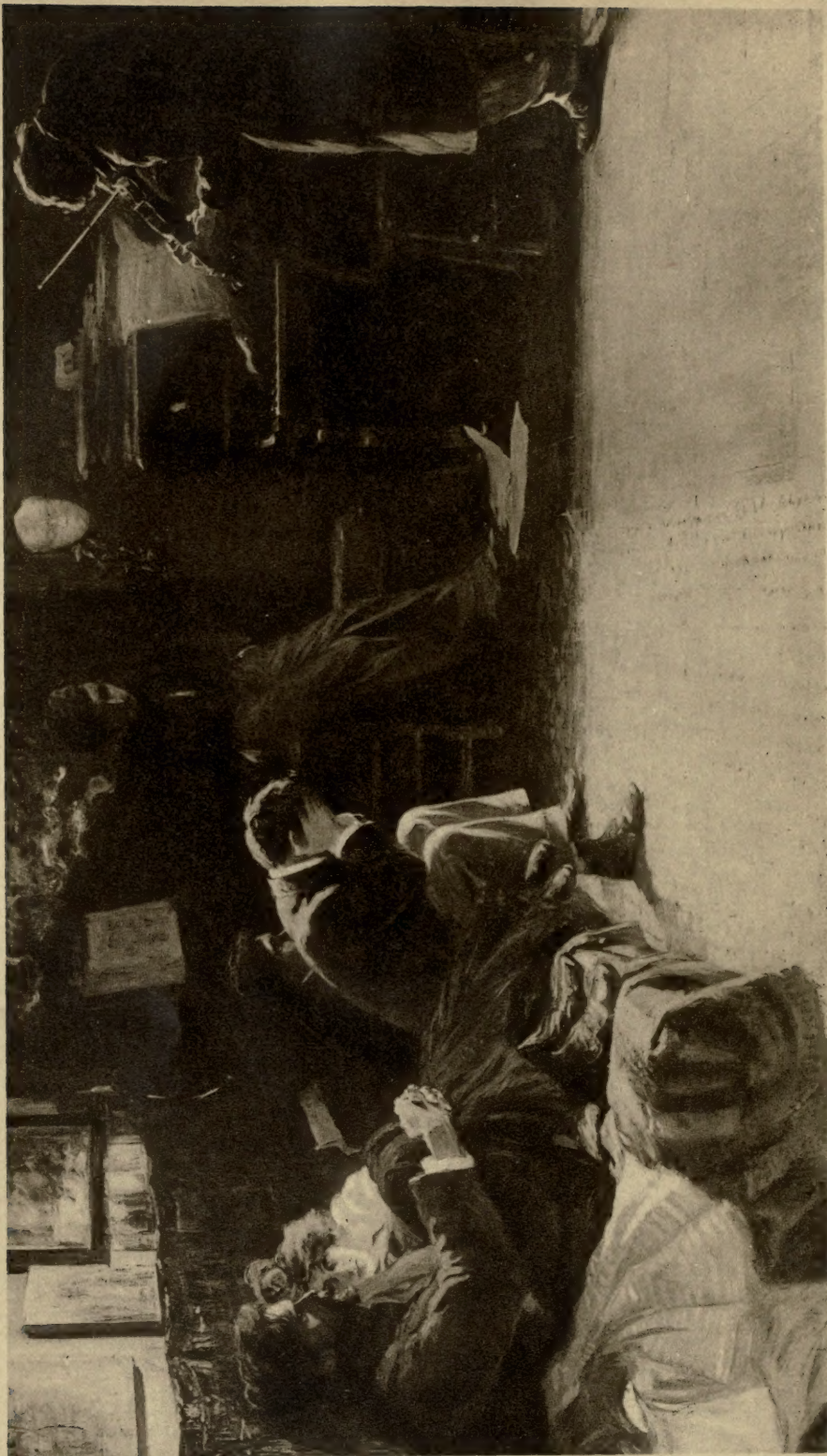


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BALESTRIERI'S FAMOUS SALON PICTURE, "BEETHOVEN," DEPICTING THE IRRESISTIBLE
POWER OF MELODY TO AWAKEN RESPONSIVE EMOTION IN THE HUMAN HEART

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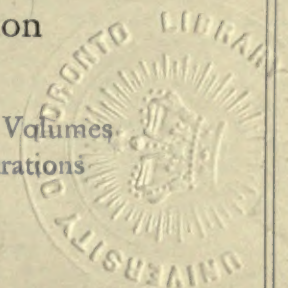
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VOLUME 9

Meudon. Town of France, in the dept. of Seine-et-Oise. It lies 3 m. S.W. of Paris, and 1 m. S. of Sèvres, and is connected with Paris by rly. It has chalk works, and an observatory and magnetic laboratory. Rabelais was priest of the parish, and is commemorated by a monument in the 16th century church. The 17th century château of Meudon was destroyed by the Prussians in 1871. Pop. 10,000.

Meulebeek. Town of Belgium, in the prov. of W. Flanders. It lies 8 m. N. of Courtrai, on the Ingelmunster-Thielt rly. The industries include cotton and linen spinning and lace-making. It was in German occupation throughout the Great War. Pop. 9,300.

Meulen, ADAM FRANS VAN DER (1632-90). Flemish painter. Born at Brussels, Jan. 11, 1632, he was apprenticed to P. Snayers, and in 1665 went to Paris to accept a post in the Gobelins Factory. He painted battlescenes, of which he acquired a knowledge by accompanying Louis XIV on his campaigns. He died in Paris, Oct. 15, 1690. Characteristic examples of his work are in the galleries of Munich, Versailles, Petrograd, and the Louvre.



A. F. van der Meulen,
Flemish painter
After Largillière

Meunier, CONSTANTIN (1831-1905). Belgian sculptor and painter. Born at Etterbeek, Brussels, April 12, 1831, he first appeared at the Brussels Salon in 1851 with a piece of sculpture, *Guirlande*. For a time he abandoned sculpture and painted scenes from the life of the Trappists, and also of peasant life and pictures of workers in Spaai. He returned to sculpture and devoted himself to portraying scenes from the life of the workers in the coal mines, having his studio in Louvain in the heart of the Belgian black country. His chief works include *Grison*, *Le Débardeur*, *Ecce Homo*, *Le Cheval de Mine*, *L'Apothéose du Travail* (with four figures of *La Mine*, *Le Port*, *L'Industrie*, *La Moisson*), in the Mus. of Decorative Arts in Brussels. He is represented in the Luxembourg Museum by a paint-

ing *Au Pays Noir* and by some bronzes. He died at Brussels, April 4, 1905.

Meurthe. River of France. Rising in the Vosges, N.E. of Gérardmer, it flows in a N.W. direction into Lorraine, joined by the Vezouse, near Lunéville, and meets the Moselle near Frouard. The chief towns on its banks are Fraize, St. Dié, Baccarat, Lunéville, and Nancy. Its length is 102 m.

Meurthe-et-Moselle. Dept. of France, formed in 1871 after the re-making of the E. frontier of France. Bounded E. by Alsace and Lorraine, it lies contiguous with Belgium and Luxembourg, and with the depts. of Meuse and Vosges. It is generally hilly and well wooded, particularly in the S., where it contains part of the Vosges Mts., but is well cultivated, potatoes, cereals, beets, and the vine being grown. Iron, salt, and building stone are mineral products, and among the varied industries are brewing, timber working, and chemical products, textiles, and glass-making. The Meurthe, Moselle, Mortagne, Madon, Sanon, and Chiers are among the rivers; the Canal de la Marne traverses the dept. Nancy is the capital, other towns of note being Toul, Lunéville, Briey, Longwy, Pont-à-Mousson, Thiaucourt, and Baccarat. It was prominent in the early stages of the Great War, as is noted in the articles Longwy, Nancy, etc. Area, 2,036 sq. m. Pop. 564,700.

Meuse (Dutch, *Maas*). River of W. Europe. It rises about 16 m. N.E. of Langres, Haute-Marne, flows in a N. direction, for a few miles underground, through the depts. of Vosges, Meuse, and Ardennes, and passes into Belgium at Givet, after a sinuous course from Sedan. At Namur it turns N.E., passing through a deep valley between that town and Liège, and enters Dutch territory just S. of Maastricht.

The Meuse then flows N. and W. until it joins the Waal, a branch of the lower Rhine, near Gorkum, where it becomes the Merwede, and, after passing the marshy tract known as the Biesbosch, enters the North Sea at several points, the chief of its mouths being the Oude Maas, where stands the Hook of Holland, the Haringvliet, and the Grevelingen. Among

its tributaries are the Bar, Sambre, Semoy, Lesse, Ourthe, and Roer, and among the towns on its banks are Neufchâteau, Commercy, Verdun, Mézières, Dinant, Namur, Huy, Liège, Maastricht, and Venlo. Navigable up to a point near Verdun, the Meuse is joined by several canals, notably the Marne-Rhine canal and the Ardennes canal.

Its total length is 575 m., 305 m. being in France, 120 m. in Belgium, and 150 m. in the Netherlands. The area of its basin is computed at 12,740 sq. m. The river was very prominent throughout the Great War. The operations along its line are described in the articles Dinant, Meuse-Argonne, Namur, Verdun, and others.

Meuse. Dept. of France. Contiguous with the depts. of Meurthe-et-Moselle, Vosges, Haute-Marne, Marne, Ardennes, and with Belgium, it is generally hilly, and contains the great forest tracks of the Argonne and the Woëvre. The Meuse flows in a N.E. direction through the dept., and other rivers are the Ornain, Aire, Aisne, Chiers, Loison, and Orne. The Canal de la Marne traverses the dept. Cereals, beet, potatoes are grown, and, round Bar-le-Duc and Bussy, the vine; among industries are quarrying, timber working, and foundries. The capital is Bar-le-Duc, other towns of note being Commercy, Verdun, Montmédy, Clermont, Ligny-en-Barrois, and Varennes. The dept. suffered severely during the Great War, large areas round Verdun being completely desolated. Area, 2,408 sq. m. Pop. 278,000.

Meuse, BATTLES OF THE. Fought between the French and the Germans, Aug. 25-27, 1914. After the defeat of the 4th and 3rd French armies in the great battles of Virton-Ardennes, Aug. 20-24, 1914, and of the 5th French army at Charleroi, the 4th French army (Langle de Cary) was ordered to establish itself on the left bank of the Meuse, and to hold them, while maintaining contact with the 5th army, then in rapid retreat. The front of its five corps ran from Mézières to Sassey, S. of Stenay. At Sassey it was in contact with the 3rd army, but W. of Mézières a gap of 30 miles opened between it and the 5th army, into

which the Germans of the 2nd and 3rd armies were pouring. The defence of the Meuse was not energetic, and was unsuccessful.

On Aug. 25, troops of the 4th German army (duke of Württemberg) bridged the river at Remilly, and during the following night forced a passage at Donchery, below Sedan. On Aug. 26 there was violent fighting at these points, and the German artillery drove the French back from the outskirts of Torcy, S.W. of Sedan, where the bridge over the Meuse had been

complete standstill S. of Sedan. Hausen, however, was ordered by the supreme command to march S.W., and he did not go to the 4th army's aid. His advance towards Signy l'Abbaye, nevertheless, brought him on the flank of the 4th French army.

On the night of Aug. 27 Langle de Cary issued orders to the French to resume the battle next day, and drive the Germans back into the Meuse. The Germans were attacking on the French right, where their advance from the Meuse

became most threatening, and on the French left, where they were held in check with severe fighting in the direction of Signy l'Abbaye. In the centre, the French troops gained ground towards Sedan, and German troops recrossed the Meuse. In the early morning, and again in the early afternoon, a fresh cry for aid was addressed by the German 4th army to Hausen, with the warning that the Germans had been compelled to withdraw their left towards Olizy.

Hausen therefore ordered his 12th and 19th corps to move S.E. on the

connected, incoherent character of the fighting. The population of the country he traversed fled, reproaching his troops for their retreat, and embarrassing his movements. Langle de Cary was, however, maintained in his command by Joffre. The casualties on both sides were heavy. **H. W. Wilson**

Meuse-Argonne. District of France between the Meuse and the west edge of the Argonne forest, in which the Americans, assisted by the French, made an offensive against the Germans, in Sept.-Nov., 1918. The first American army was secretly transferred to the W. side of the Meuse, and after an intensive artillery preparation, the infantry advanced to the attack on the morning of Sept. 26. This initial attack, which was a complete surprise to the Germans, was successful, Vauquois and Varennes being captured, and Montfaucon entered and evacuated. Simultaneously the 4th French army advanced in E. Champagne.

The attack was renewed in strength on Oct. 4, and continued throughout that month. Among the outstanding incidents of the campaign were the piercing of the Kriemhilde line and the capture of Romagne on Oct. 14, and the defeat of the Prussian Guard at the Côte de Chatillon on Oct. 16 after a fight lasting 48 hours. Grandpré was stormed by the 77th division on the same day, was evacuated, and finally gained on Oct. 23.

An important offensive began on Nov. 1, when the Americans advanced to a depth of about 4 m., taking several villages and 3,690 prisoners. Buzancy was captured on Nov. 2, Beaufort fell on Nov. 4, as also did Beaumont. The continued pressure of the Americans forced the Germans to retreat rapidly. By Nov. 7 the former had reached the left bank of the Meuse opposite Sedan, while the strategic crossing at Stenay was secured shortly before the armistice.

This 46 days' campaign had an important effect in hastening the German collapse, and while its progress was not so rapid as that of the British and French in the centre of the battle-front, it served its purpose, chief of which was the bending of the German left wing. As the result of it the vital Montmédy-Sedan rly. was cut and the Metz-Mézières rly. rendered useless to the German communications. There is no doubt that had the armistice not been signed the American victories would have considerably helped to cut off practically the whole of the German armies. See Argonne, Campaigns in the.



Meuse. Sketch map showing dispositions of the opposing armies in the series of battles in August, 1914

left intact through want of explosives. The centre of the French position had been pierced; but after crossing the river the Germans were checked, though they had secured a good bridge-head S. of Sedan.

A fresh front was formed by the French from Sassey and Luzu, on the Meuse, along the high ground S. of the river near Sedan, with their left in the air W. of Mézières, near Signy l'Abbaye; and Langle de Cary resolved to fight on this line. On Aug. 26 the Germans bridged the river at several points between Cesse and Luzu, and threatened his right. Other bridges were constructed by them at Mouzon, and they began to develop an advance along the whole Meuse front, and to push S. from Remilly and Sedan, but suffered a severe repulse at Noyers. This caused so much alarm to the 4th German army command that it demanded aid from the 3rd army (Hausen), stating that the 8th corps had been brought to a

28th. The existence of his army was not, so far, known to the French.

The French had won a distinct success, handling the German 4th army very severely, and had their reserves been thrown in, it is possible that they might have gained a great victory, as the German 5th army was paralysed by orders from Moltke to be ready to send troops to Russia. The situation was generally good on the French front, but Langle, in view of Joffre's orders for a retreat, decided to fall back on the Aisne, to the immense disappointment of his troops. He retired rapidly, abandoning a great extent of country and the Argonne, where there were many opportunities of fighting delaying actions. His conduct of the battle has been severely criticised by French authorities, who blame him for failing to utilise great opportunities to deliver the counter attacks which Joffre had ordered; whenever possible, and for the dis-

Meux, Sir Hedworth (b. 1856). British sailor. Born July 5, 1856, son of the 2nd earl of Durham. Hedworth Lambton entered the navy in 1870. As captain of the *Powerful*, he landed in S. Africa in 1899 with a naval brigade, and rendered vital service during the siege of Ladysmith. From 1904-6 he commanded a cruiser squadron, from 1908-10 the China station, and he was commander-in-chief at Portsmouth, 1912-16. In 1911, on succeeding to the estates of Sir Henry Meux, the brewer, he took that name. He was made a K.C.B. in 1908 and a G.C.B. in 1913. From 1916-18 he was M.P. for Portsmouth, and he retired from the service in 1921.



Sir Hedworth Meux,
British sailor

Mevagissey. Fishing town, Cornwall, England. 12 m. E. of Truro, it is a summer resort, and has long been engaged in the pilchard fishery. There is a good harbour, and a pier, constructed in 1895. Pop. 1,800.

Mexborough. Urban dist. and market town of Yorkshire (W.R.) It stands on the Don, 5 m. from Rotherham and 11 m. from Sheffield, with stations on the G.C. and

Mid. Rlys. The chief building is the church of S. John the Baptist, partly Early English. There was a castle here in the Middle Ages. The chief industries are ironworks and the making of pottery and glass, while around are coal mines. The council supplies electricity. Market day, Sat. Pop. 14,400.

Mexborough, EARL OF. Irish title borne since 1766 by the family of Savile. The Saviles are a very old Yorkshire family, and one of them, Sir John Savile, was M.P. for Hedon, 1747-54. In 1753 he was made an Irish baron, and in 1766 earl of Mexborough. He was succeeded by his son John, and then by his grandson, another John (1783-1860). John, the 4th earl (1810-99), was M.P. for Gatton before 1832 and afterwards for Pontefract. In 1916 John Henry (b. 1868) became the 6th earl. The family estates are in Yorkshire, where are the seats, Methley Park, Leeds, and Arden Hall, Helmsley. The earl's eldest son is called Viscount Pollington.

Mexcala OR MESCALA. River of Mexico. Rising in the state of Tlaxcala and known as the Atoyac in its upper course, it flows for 435 m. generally W. to the Pacific. In its lower course it takes the name of Rio de las Balsas and separates the states of Michoacan and Guerrero. The swift current furnishes power for textile mills.

canic, containing craters still active, and subject to earthquakes, a number of peaks rise to much greater heights, e.g. Orizaba (18,240 ft.) and Popocatepetl (17,520 ft.). Elsewhere the surface of the plateau is much broken; it contains several inland drainage basins (*bolsón*), notably the Valley of Mexico in the S., containing extensive lakes and marshes; and the rivers which escape from it to the sea do so by way of falls and ravines, so that access from the coasts is difficult. The plateau falls S.E. to the low Isthmus of Tehuantepec (170 m. wide), and E. of this the land includes, on the S. the Chiapas highlands (5,000 to 8,000 ft.), and on the N. the lowland of Tabasco and the Yucatan peninsula.

The largest river on the E. is the Grande del Norte (1,500 m.). The rivers of the plateau are of most service for power where they fall over its edge, but their flow is irregular according to season, and important power establishments have needed the construction of great dams and reservoirs. The streams of the coastal plains are winding and slow; some on the E., like the Pánuco, Papaloapan, Coatzacoalcas, and Grijalva, are used for inland navigation, but their mouths are hampered by bars, or need constant dredging.

The rocks of a greater part of the plateau and the E. Sierra are cretaceous, the W. heights and the S. of the plateau consist mainly of tertiary volcanic rocks. Yucatan consists of sedimentaries of the same period, and the plains have a wide extent of more recent deposits.

The climate is so markedly influenced by elevation that there is a familiar threefold division of the land—(1) the *tierra caliente*, hot land, from the coasts up to about 3,000 ft., with a warm, dry winter and hot, wet summer; (2) the *tierra templada*, temperate land, from 3,000 to 6,500 ft., free of the excessive summer moisture of the lower levels and the cold winter winds of the higher; (3) the *tierra fría*, cold land, above 2. Here frost is rare except at very high elevations, and the name of the zone is only comparative. The chief inland towns are shared between zones 2 and 3; the capital, Mexico City, for example, is in the highest, being situated at an altitude of 7,500 ft. The dry season, over most of the country, lasts from Oct. to May; the wet from June to Sept. Both coastal slopes, especially the Pacific, receive heavy rainfall, but in the N. and N.W. parts of the plateau and in Lower California

MEXICO: IN ANCIENT & MODERN TIMES

O. J. R. Howarth, M.A., Author, *Commercial Geography of the World*

The reader should consult the articles on the cities, towns, and rivers; rulers, statesmen, and men of letters of Mexico. See Archaeology; Aztec; Maya; also North America

Mexico is a republic of North America, occupying the southern extension of the continent toward Central America. It lies approximately between 14° and 29° N. lat., and between 90° and 115° W. long., and has an area of 767,000 sq. m. Guadalupe and the Revilla



Mexico arms

Gigedo group, oceanic islands in the Pacific, belong to Mexico, and the possession of another island, Clipperton or Pasion, has been disputed with France. Mexico is bounded N. by the United States, the Rio Grande del Norte forming the E. part of the N. frontier; on the S.E. it is bounded by British Honduras and Guatemala. It has a coast-line of over 1,500 m. on the Atlantic (Gulf of Mexico), and of over 2,000 m. on the Pacific side, the length being enhanced on the one side by the hammer-shaped

peninsula of Yucatan in the S.E., and on the other by the narrower, longer peninsula of Lower California in the N.W.

About six-sevenths of Mexico consists of a high plateau, continuing that of the S.W. United States, and bordered E., N., and S. by mountains which slope steeply to low coastal plains. The plateau ranges in average elevation from 4,000 ft. in the N. to 8,000 ft. in the S.; the E. bordering mountains (Sierra Madre Oriental) form a broken chain with summits up to 10,000 ft.; the W. (Sierra Madre Occidental), less broken, have a somewhat greater general elevation; and the S. (Sierra del Sur) range from 7,000 up to more than 11,000 ft.

From the S. part of the plateau itself, a region strongly vol-



Mexican flag

semi-desert conditions are found. Trade winds, from N.E. to S.E., prevail on the Atlantic coast, but may be replaced between Oct. and March by the tempestuous "northers." The prevalent winds on the Pacific coast are N.W. during winter, and S.W. to S.E. from April to Oct., when storms are common.

The low coastal plains, behind the bare sand-bars, carry tropical forest, which merges into sub-tropical and temperate types as the plateau is ascended. The dry N. has a steppe vegetation if any; farther S. the land is fertile. The porous limestone of Yucatan carries a scrubby natural vegetation. Among larger wild animals the puma, jaguar, bear, and boar are found. Poisonous snakes are not uncommon, and there are many harmful insects; the mosquito, breeding in the coastal lagoons and marshes, carries malaria and yellow fever.

The population may be in the neighbourhood of 15,000,000. Perhaps a sixth, or less, of these are Creoles, pure whites born in Mexico and mostly of Spanish descent; a full half are *mestizos* or half-castes. The Indians are indigenous; they fall into a number of divisions according to "tribes," languages, and characters, but for the most part they attain no high standard of civilization. The foreign white population includes American, British, Spanish, and German elements; during the Great War many Germans entered from other parts of the Americas. Chinese and Japanese are fairly numerous, and there are certain other well-known "colonies," as the Syrians (Maronite Christians), who form a strong trading class in Yucatan.

Staple Food Crops

The most important food crop is maize, from which is made a staple of food, the flat cake called *tortilla*. The country is not, as a rule, self-sufficing in either maize or wheat. The *fríjol* and other beans are grown and eaten; oranges, bananas, vines, agaves from which the drinks of the common people, *pulque* and *mescal*, are distilled, sugar and coffee are cultivated for home consumption and export. Fibre plants are specially important; among these, most of all, the henequen or sisal hemp of Yucatan. Cotton is grown in central Mexico; the *guayule* of the north and other wild plants yield rubber, which is also cultivated. Among vegetable gums, the *chicle* of the S.E. lowlands is the basis of chewing gum. Cattle ranching is important in the N. half of the country.

The mineral wealth of Mexico is immense. Silver, gold, copper,

iron, lead, and zinc are the most important metals, and coal and salt are found. The richest mineral region, broadly speaking, is the slope of the Sierra Madre Occidental. The oil fields are among the most important in the world. Of these the chief are in the Gulf coast lands, (a) in the south of Tamaulipas State and northern Vera Cruz, behind the ports of Tampico, Puerto Lobos, and Tuxpan, and (b) in southern Vera Cruz behind the port of Puerto Mexico. Both mining and oil interests are largely in American and British hands. The unsettled condition of the country has affected mining operations seriously in recent years; the working of the oil fields, less so, though work ceased on some of the latter. British and Canadian interests are extensively involved in the development of water power, which, at Boquilla, and elsewhere, has been applied on a large scale to the generation of electricity for lighting, heating, and traction in towns, and power in mines and factories.

Mining and Manufacture

Among manufactures, there are a few large metallurgical works, as the iron and steel foundries at Monterrey and in Hidalgo. The largest cotton factories are in and about Orizaba, Puebla, and Mexico City, and those for wool at Tlalnepantla. Jute, silk, and leather goods, cigarettes, soap, and glycerine are other important manufactures.

Inasmuch as mining and manufacturing have been set on foot mostly by foreign organization and capital, the constitution of 1917 sought to limit these interests, and to give preference to native enterprise. The same document imposes detailed conditions as to labour, which, especially in the hot lands, is neither plentiful nor efficient.

Exports, under normal conditions and before the Great War, reached £30,000,000 in value, and imports about £18,000,000. The most distinctive items among the former are silver, petroleum, gold, and sisal hemp.

The chief Atlantic ports are Tampico (for the northern oil fields) at the mouth of the Panuco, Vera Cruz with a good artificial harbour, Puerto Mexico at the mouth of the Coatzacoalcos on the N. side of the isthmus of Tehuantepec, and Progreso in Yucatan, on an open roadstead, from which sisal hemp is shipped. The chief Pacific ports are Salina Cruz on the S. side of the isthmus of Tehuantepec (connected with Puerto Mexico by a trans-isthmus railway), Acapulco, Manzanillo, and Mazatlan. The shipping is mainly American and British.

The rlys. have not been systematically laid out, but excepting certain parts the country, under normal conditions, would be fairly well served. The lines have mostly been taken over by the government, and have been much damaged in recent disturbances. The total mileage is somewhat over 15,000. Roads are bad and unmetalled excepting a few; they are distinguished as the "horse-tracks," narrow paths of the sierras, and "carriage-roads," wider trails on the plateau, and in the coast-lands. The best are the Spanish roads, those built during Diaz's régime to supplement the railways, and those built to connect mines with railways. There are some 25 wireless stations in Mexico; the largest (range 1,550 m.) is that of Chapultepec, a suburb of Mexico City. There are fairly complete land telegraph and postal systems.

Federal Legislation

Mexico is (nominally) a federation of 28 states, two territories, and a federal district: the states are free in respect of internal affairs. The federation has a legislative paid congress divided into a house of representatives and a senate, both elected. The federal executive is vested in an elected president, whose eligibility and powers are hedged about in the constitution with limitations which are habitually disregarded. Each state has a republican form of government, and is under an elected governor. There is an elaborate legal system, in which the judges of the supreme court are appointed by Congress from among nominees by the states.

O. J. R. Howarth

ARCHAEOLOGY. The material remains of early Mexico pertain to a wide region dominated by the Maya, Zapotec, and Aztec peoples. It extended from the Anahuac tableland to Costa Rica, where it impinged on the Chibcha region.

For many centuries before our era the arid tablelands of middle America were occupied by primitive peoples cultivating maize and producing crude pottery and woven fabrics, the humid lowlands being inhabited by lowlier hunting and fishing tribes. By the 2nd century B.C. there began to emerge in the Maya lowlands an advanced civilization marked by stone sculpture, rubble architecture, pictography, a chronological system and complex religious rituals. The similarity of these arts and institutions to some in the Old World, and the lack of organic links between them and the primitive aboriginal culture, have led competent authorities to postulate the arrival by sea of cultural ideas.



Mexico. Map of the southern republic of North America, showing the railway connexions with the U.S.A. and the Atlantic and Pacific ports

This early Maya civilization, traced back by an inscribed stone object to 100 B.C., lasted until A.D. 600. From 420 onwards northward-moving colonists established in Yucatan new cultural centres which also decayed shortly after 600, but about 980 experienced a renaissance. The later civilization became subsequently affected by Aztec impact. The point of origination is unknown. A stela dated A.D. 214 shows that Tikal, in Guatemala, was one of the earliest cities, although its claims may be contested by Uaxactun, where the date A.D. 50 was identified in 1916. But its rival, Copan, in Honduras, erected buildings with dressed courses and bonded corners, adorned with sculptured figures in alien dress. As the advanced arts penetrated northward local schools arose, notably at Palenque, Yaxchilan, and Piedras Negras.

The monuments, mostly of rubble or adobe, were sometimes faced with stucco reliefs or painted designs. The later style, in Yucatan, as at Chichen Itza and Uxmal, was based on soft limestone slabs. All were erected on terraced and truncated pyramidal platforms, occasionally designed as burial-mounds as at Copan, but mostly as solid masses surmounted by ceremonial buildings. At Yaxchilan the river

banks were carved into steps, recalling the ghats at Benares, and were crowned by considerable structures. One of them enshrined a Buddha-like figure, cross-legged, with hands on knees, similar to the image carved on the superb dragon stela of Quirigua.

In S. Mexico vast Zapotec ruins at Mitla and Monte Alban exhibit megalithic impulses. The Aztec palaces and teocalli or temple-pyramids of Mexico city have vanished, but it is clear that the cultural influences emanating from Guatemala became attenuated as they spread outwards, the Aztec having made no advancement of their own.

Sculptured remains include colossal representations of deities, calendar and votive stones in Mexico city, vases for pulque-drink or human hearts, and other ritual objects. Pottery was decorated with human or animal designs in relief, or painted with mythological scenes. Chipped and polished stone implements abound, especially in obsidian and chert. Goldwork was inferior to Chibcha workmanship. Copper ornaments occur, intentional bronze being apparently unknown. Human skulls covered with turquoise mosaic, besides feathered head-dresses and mantles, are preserved.

See *The Civilization of Ancient Mexico*, L. Spence, 1912; *A Study of Maya Art*, H. J. Spinden, 1913; *Mexican Archaeology*, T. A. Joyce, 1914.

E. G. Harmer

HISTORY. In the two centuries before the Spanish conquest, the Aztecs established their rule over a great part of Mexico, and allied themselves with the kingdom of Tezouco (near Mexico City), the culture of which was higher than their own. In the reign of Montezuma II (q.v.) Mexico was invaded by the Spaniards under Cortes (q.v.) and conquered in 1519-21. Their first possession in the New World, it was called New Spain and was administered from Madrid, and settlement was carefully controlled. The religious orders carried Spanish authority N. by means of missions, and by the end of the 18th century it extended far along the Pacific coast. The central provinces were the most civilized and peaceful part of Spanish N. America.

Unrest, due largely to the corruption of European officials, led to a rising in 1810, chiefly among the Indians. It was suppressed in 1817, but discontent remained, and in 1820 the revolution in Spain made possible a union between the two parties. In 1821, under the Plan of Iguala, Mexico was pro-



Mexico. Rural guards, employed as police in the country districts of the republic, wearing the national hat

claimed an independent monarchy; but differences supervened between the monarchist and republican parties. Iturbide, a Creole general, reigned as emperor in 1822-23, but the republican party was victorious in the latter year. A federal constitution was brought into force, and Spain abandoned her claim in 1839. The country at this time included California, Arizona, Texas, Utah, etc., and was twice as large as now. But Mexico now became, and remains, an almost continuously disordered country.

In 1835 Texas declared independence, and in 1845 it was admitted to union with the U.S.A. This led to war, in which the Mexicans were beaten, and Texas, New Mexico, and California were ceded to the U.S.A. for a money payment.

In 1855 the Conservative régime ended with the fall of the dictator Santa Anna, and the struggle that followed between the anti-clerical, liberal Federalists, and the clerical, conservative Federalists, aroused deeper feeling than the usual outbreaks. Juarez, the liberal head of the government, was first driven from Mexico City to Vera Cruz, and during the years of civil war which followed he promulgated laws depriving the Church of all rights and possessions, which were put into effect after the return of the Liberals to power in 1860. Juarez's repudiation of foreign debts brought foreign intervention, and Spanish, British, and French troops landed in 1861.

were withdrawn owing to representations by the American government. By 1867 Diaz was victorious and Maximilian was executed. In 1876 Diaz (*q.v.*) was elected president, a position he held till 1911. He became, after his re-election in 1884, a dictator, indifferent to party and ruling by means of a centralised administration, with the state governors admitted to a sort of partnership. Under his rule the finances were rehabilitated, guerrilla warfare was put down, and economic conditions improved.

The period which followed the downfall of Diaz was one of internal warfare, with one leader and then another gaining a temporary supremacy. In 1913 General Huerta (*q.v.*) assumed power and executed Madero (*q.v.*). Huerta was overthrown the following year by Carranza and Villa, who in turn intrigued for sole power. In 1916 the Carranzist government was recognized by the U.S. government, though Villa continued a fierce guerrilla warfare, and the position of the new government was unstable. In 1920 Carranza was captured by revolutionaries under General Herrera and shot on May 16, and Herrera became president. On Sept. 6, 1920, General Obregon was elected president.

In Dec., 1923, a revolution broke out in Vera Cruz, where General Huerta set up a provisional government. The cause of the rising was a dispute as to candidates for the office of president. Much unsettlement marked the period 1923-25.

O. J. E. Howarth

Napoleon III had a vision of a Franco-American empire, and after the withdrawal of the British and Spanish armies the French took Mexico City in 1863, and installed a provisional government which elected Maximilian, brother of the Austrian emperor, as king. On his arrival he made a real effort to introduce settled government, but the activities of Juarez in the N. and General Diaz in the S. made his position impossible, and the French troops

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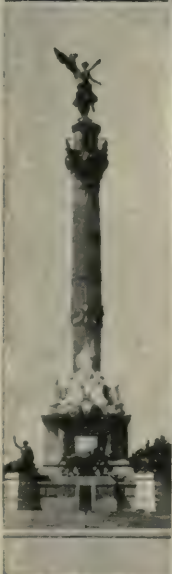
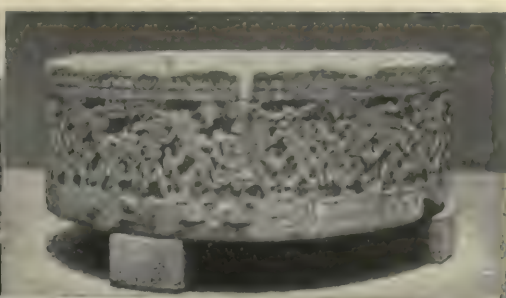
Mexico. Inland state of the republic of Mexico. Bounded N. by the state of Hidalgo and S. by Guerrero and Morelos, it covers an area of 9,230 sq. m., and encloses the greater part of the federal dist. and city of Mexico, which, however, do not form part of the state. The S.E. and central portions are mountainous, the highest summit being the Popocatepetl volcano, but the N. part is relatively flat. There are a few rivers, the principal being the Lerma, and of the lakes the largest is Texcoco in the E. An important industry is stock-raising, and gold and silver mining is carried on. Cereals, sugar, coffee, and tobacco are cultivated, and manufactures include cotton and woollen goods, glass, flour, and pottery. The National, Central, and other rlys. serve the state. Toluca is the capital. Pop 1,000,000.

Mexico. City of N. America, and capital of the republic of Mexico. It lies within the federal dist. on the plateau of Anahuac, 7,350 ft. alt., 290 m. by rly. from Acapulco on the Pacific Ocean, and 263 m. from Vera Cruz on the Gulf of Mexico.

It occupies the middle of an elevated valley girt by high mountains, over which the available passes are at a considerable elevation.

Naturally healthy, with an agreeable climate, the rainfall is 20 ins.; the temperature ranges from 53° F. to 65° F.; the prevailing N.W. winds are damp, although the less frequent S. winds are very dry. A modern drainage system completed in 1900 carries the sewage ultimately to the Gulf of Mexico, and the water supply has been improved. Textiles and cigarettes are the most important products of the 150 factories, which also make boots and shoes, flour, chocolate, furniture, pianos, glass soap etc. Electric rlys. run through well-paved streets.

The cathedral, begun in 1572 and unfinished for more than two centuries, occupies the site of the temple of Huitzilopochtli, the war-



1. Panoramic view of city from the cathedral tower,
2. Stone of the Sun; ancient Aztec relic once used for
human sacrifices. 3. Column of Independence, erected
in 1890 to commemorate independence of the country.
4. Memorial to Guatemotzin, the last Aztec sovereign,
who defended the city against Cortez, 1521. 5. The

National Palace in the Plaza Mayor on the site of two
residences of Montezuma and Cortez. 6. Country resi-
dence of the Mexican presidents in Chapultepec Park.
7. The cathedral, erected on the site of an Aztec temple
and replacing an earlier building of 1525. Founded
in 1573, it was not finally completed until 1791.

MEXICO: BUILDINGS AND MEMORIALS IN THE CAPITAL CITY OF MEXICO



Mexico. Ground plan showing the principal buildings and thoroughfares of the city

god of the Aztecs. It lies on the N. side of the Plaza de la Constitución; on the E. side is the national palace which contains, besides the public offices, the national museum, housing a unique collection of Aztec relics. The national observatory and meteorological bureau are close by. Facing the cathedral is the city hall. On the Plaza de la Republica is the legislative palace, one of the finest edifices in Latin America. The building in which, in 1536, was established the first printing press in the American continent, still stands. In 1693 the *Mercurio Volante*, the first American newspaper, was published in the city.

The Plaza de la Constitución, or Plaza de Armas, or Plaza Mayor, is the centre of the city; it covers 14 acres, and the park and promenade, the Alameda, covers 40 acres. Many of the houses have terraced roofs and inner courts, and the older quarters maintain the characteristic appearance of a Spanish city. There are frequent though slight earthquakes. The present city was founded by Cortes in 1522 on the site of the Aztec capital, Tenochtitlan, which occupies a number of islands in Lake Texcoco; the lake is now $2\frac{1}{2}$ m. E. of the city. $2\frac{1}{2}$ m. S.W. is the hill of Chapultepec, where Montezuma had a palace. In 1824 the city became the capital of the republic. Pop. 470,000.

Mexico, FEDERAL DISTRICT OF. Territory acquired from the state of Mexico for the specific use of the Federal Government of Mexico. It is enclosed on three sides by the state of Mexico, being bordered S. by the state of Morelos, and covers an area of 578 sq. m. The city of

Mexico and twelve other municipalities are situated within its limits. Pop. 763,500.

Mexico, GULF OF. Great inland gulf or sea, forming a westward extension of the Atlantic Ocean. Almost entirely enclosed by land, it has the U.S.A. on the N., Mexico on the W. and S., the peninsulas of Florida and Yucatan constricting the two entrances. It has a greatest length from E. to W. of 1,150 m., a greatest breadth N. to S. of 680 m., and an area of more than 700,000 sq. m. The two channels, the Strait of Florida on the N. and Yucatan Channel on the S., formed by the island of Cuba, are shallow, but the gulf has a depth of more than 2,000 fathoms at a point between the mouth of the Mississippi and the Yucatan peninsula, and reaches a maximum depth of 2,119 fathoms in about $25^{\circ} 7' N.$ and $89^{\circ} 37' W.$, while the greater part of its expanse has a depth in excess of 1,650 fathoms.

Several large rivers empty their waters into the gulf, the most important being the Mississippi, Rio Grande del Norte, Colorado, Sabine, Brazos, Mobile, and Apalachicola. Apart from the Bay of Campeche there are no pronounced indentations, and the best harbours are Galveston, New Orleans, Mobile, Pensacola, and Tampa, Vera Cruz, Key West, and Havana. The Gulf Stream passes into the gulf through the Yucatan channel and makes its exit by the Strait of Florida, its pressure giving the gulf a temperature of some 8° in excess of that of the open ocean in the same degree of latitude. See Gulf Stream.

Meyer. Name of a German firm of publishers and booksellers. It was founded at Gotha in 1826 by

Joseph Meyer (1796–1856), the son of a shoemaker, under the name of the Bibliographical Institute. From this, Meyer's large *Konversations-Lexikon* or encyclopedia, in 43 vols., with maps and illustrations, was issued (1839–55). Joseph's son Hermann Julius (1826–1909), after spending seven years in America, where he established a branch of the Institute, took over his father's business, and removed it to Leipzig in 1874. He brought out an abridged edition of the encyclopedia in 15 vols. (1857–60), to which supplementary vols. were added; dictionaries on special subjects; guide-books; and colloquial linguistic manuals of European and Oriental languages. His two sons, Hans (b. 1858) and Arndt (b. 1859) entered the business, which from 1895 was under their sole management. Hans was also an intrepid explorer. After travelling in E. Asia, N. America, and S. Africa, he devoted himself to the exploration of Kilima-Njaro, which he was the first to ascend in 1889. *Pron. My-er.*

Meyer, CONRAD FERDINAND (1825–98). Swiss novelist and poet. Born at Zürich, Oct. 12, 1825, he studied law there, and after some years devoted to historical studies in Italy and France, settled in 1875 at Kilchberg. He died, Nov. 23, 1898. As an author, Meyer stands aloof from all controversy, his point of view being solely that of the disinterested artist. His work, which deals mainly with the medieval and Renaissance periods, is marked by insight into character and motive, and by a polished style. See *Life*, A. Frey, 1900; *Memoir* by his sister, B. Meyer, 1903.

Meyer, EDUARD (b. 1855). German historian. Born at Hamburg, Jan. 25, 1855, he was educated at Bonn and Leipzig. In 1884 he became professor of ancient history at Leipzig. In 1885 at Breslau, in 1889 at Halle, and in 1902 at Berlin. Specialising in ancient history, he approached the subject from a new standpoint, basing his interpretation upon the investigation of comparative philology, folklore, numismatics, and monuments, as well as upon a close study of documents. His chief works are *Geschichte des Altertums* (History of Antiquity), 1884; *The Origin of Judaism*, 1896; *History of the Mormons*, 1912; *Cæsar's Monarchy* and *the Principate of Pompey*, 1918.



Eduard Meyer, German historian

Meyer, FREDERICK BROTHERTON (b. 1847). British Nonconformist divine. Born in London, April 8,



F. B. Meyer,
British divine

1847, he was educated at Brighton College and London University, and studied for the Baptist ministry at Regent's Park College. After holding charges in Liverpool and York he became minister of Victoria Road Church, Leicester, in 1874, where his ministry was so successful that a special building, known as Melbourne Hall, was erected for him in 1878. Minister of Regent's Park Chapel, London, 1888-92, he succeeded C. Newman Hall at Christ Church, Westminster Bridge Road, in the latter year. In 1909 he returned to Regent's Park Chapel, and held the pastorate until 1915, when he returned to Christ Church. He retired from the active ministry in 1920. Leader of various temperance, purity, and social campaigns, he published many Bible commentaries and *The Bells of Is*, an autobiographical work. See *Life*, M. J. Street, 1902.

Meyer, KUÑO (1858-1919). German Celtic scholar. Born at Hamburg, Dec. 20, 1858, he was educated at Leipzig, and became lecturer in Teutonic languages at Liverpool, 1884, was professor of Celtic at Liverpool, 1895-1915, and at Berlin from 1911. He specially devoted himself to Irish, and edited many early texts. The freedom of Dublin was conferred upon him for his services to the Irish nation and language. In England, he made himself conspicuous by his anti-British sentiments. He died at Leipzig, Oct. 14, 1919.

Meyer, LUKAS (1846-1902). Boer soldier. A native of the Orange Free State, he afterwards settled in the Transvaal and in 1884 he helped to found the republic of Zululand, of which he became president. When this state was united with the Transvaal, he was chosen a member, and later president, of the Volksraad. He held a command in the war of 1899-1902, taking part in the siege of Ladysmith. Meyer died at Brussels, Aug. 8, 1902.



Lukas Meyer,
Boer soldier

Meyer, MARIE PAUL (b. 1840). French Romance scholar. Born in Paris, Jan. 17, 1840, he became in 1876 professor of the languages and literature of southern Europe in the College of France, and in 1882 director of the Paris École des Chartes (school of diplomatic and palaeography). At first his studies were limited to ancient Provençal literature, but soon extended to all the Romance languages. With Gaston Paris (*q.v.*) he founded the journal *Romania*, devoted to the interests of Romance philology, and edited many old French texts.



M. Paul Meyer,
French scholar

Meyer, VICTOR (1848-1897). German chemist. Born in Berlin, Sept. 8, 1848, and educated at Berlin and Heidelberg, he became professor of chemistry at the Zürich Polytechnic, 1872, and succeeded Bunsen in the chair of chemistry at Heidelberg, 1889. He introduced new methods of determining the vapour densities of substances vaporising at high temperatures, and discovered the chemical bodies known as aldoximes and ketoximes. While investigating the impurities in benzol he discovered thiophen and afterwards produced its derivatives. He died at Heidelberg, Aug. 8, 1897.

Meyerbeer, JAKOB (1791-1864). German composer. Born in Berlin, Sept. 5, 1791, the son of a Jewish banker, Herz Beer, his name was originally Jakob Liebmänn Beer. As a child he played the piano in public in Berlin, and after studying there continued his work with Abt Vogler at Darmstadt, where he lived for two years. His powers improved until he became one of the most brilliant pianists of the day, but his mind had already turned in the direction of composition.

He began with an oratorio, and in 1813 produced his first success, the opera *Alimélek*. To develop his talent he spent some years in Italy, where a number of successful works were written, and settled in Paris in 1831. His works include the operas, *Robert the Devil*, *The Huguenots*, and *The Prophet*. He died, May 2, 1864. *Pron.* Myer-bare.



Jakob Meyerbeer,
German composer

Meynell, Famous English hunt. It hunts a district in Derbyshire and Staffordshire. Sudbury is about the centre, while Burton-on-Trent, Tutbury, and Uttoxeter are in the area. The hounds belong to the members. The hunt began as a private pack, owned by Hugo C. Meynell Ingram, and named from his residence, the Hoar Cross. He hunted the country from 1816-67, and in 1872 the pack ceased to be private property. New kennels were built at Sudbury, and the pack took its present name. See *A History of the Meynell Hounds and Country*, 1780-1901, J. L. Randall, 1901. *Pron.* Mennel.

Meynell, ALICE CHRISTIANA (1850-1922). British poet. Daughter of T. J. Thompson, and sister of Lady Butler, the battle painter, she was educated by her father, often in Italy, while Ruskin and Henley encouraged her literary ambitions. She married Wilfrid Meynell (*q.v.*) in 1877. She wrote on John Ruskin, 1900, selected the verses of John B. Tabb, 1906, and embodied the record of her finished taste in *The Flower of the Mind*, a general anthology of English verse, 1897, besides writing prefaces and essays. Her own poems, collected in 1913, appeared under titles which carry their own message, *The Rhythm of Life*, 1893; *The Colour of Life*, 1896. The volume entitled *Children of the Old Masters*, 1903, covers different ground. The whole of Alice Meynell's work reveals culture and taste. She died Nov. 27, 1922.



Alice Meynell,
British poet
Russell

Meynell, WILFRID (b. 1852). British author and journalist. He was born in Yorkshire and educated in York. He joined the Roman Catholic Church in 1870. Meynell's Benjamin Disraeli; an Unconventional Biography, 1903, is extraordinarily suggestive; while his *Verses and*



Wilfrid Meynell,
British author
Russell

Reverses, 1912, give, perhaps, the most intimate revelation of the man himself. *Journals and Journalism*, 1880, proclaimed an ideal which he practised with exceptional consistency. From 1881-99 Meynell used his position

as editor of The Weekly Register, a leading R.C. journal, for the encouragement of Liberal thought and good literature.

Mezen or **MESEN**. River of N. Russia. It is in the governments of Archangel and Vologda. Rising in Vologda, it runs W. and N.W. into the Gulf of Mezen in the White Sea, after a course of 500 m. The inhabitants of the district and town of the same name are occupied in fishing, hunting, cattle and reindeer breeding.

Mézières. Town of France, capital of the dept. of the Ardennes. It stands on both banks of the Meuse, 47 m. N.E. of Reims, and with Charleville (*q.v.*) on the left bank forms the twin town of Mézières - Charleville. An old fortress, it is also an important rly. centre and has hardware manufactures. It was captured by the Prussians in 1815 and 1871, and in the Great War the Germans captured it in Aug., 1914, and established a headquarters there. An objective of the Franco-American offensive in the last month of the war, it was reached by the French Nov. 8, the Germans before they left blowing up mines all over the town, and afterwards bombarding it for 24 hours. Over 700 houses out of a total of 1,000 were destroyed. Pop. 10,000. Mézières has been "adopted" by Manchester.

A village of this name is in the dept. of Somme, 15 m. S.E. of Amiens. Evacuated by the British in March, 1918, it fell to the Germans, together with a large ammunition dump. It was recaptured by the Canadians, Aug., 1918. See Somme, Battles of the.

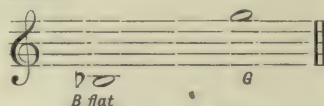
Mezőtur. Town of Hungary. Situated on the Körös, 90 m. by rly. from Budapest, it is a typical market town of the Alföld, with a municipal area of 160 sq. m.; it trades in wheat, wine, horses, and cattle, and manufactures pottery. Pop. 26,000.

Mezquit (*Prosopis*). Genus of trees of the natural order Leguminosae. Natives of Southern, Central, and Western America, their twisted pods are sweet and much used for cattle food. The leaves are twice divided into numerous leaflets. The branches are often armed with spines, and the small green or yellow flowers are clustered in heads or spikes. *P. glandulosa*, in addition to its hard, durable timber, yields a gum like gum-arabic.

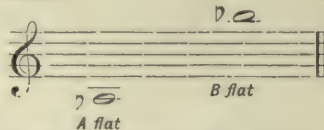
Mezzofanti, GIUSEPPE GASPARD (1774-1849). Italian cardinal and linguist. The son of a carpenter,

he was born at Bologna, Sept. 17, 1774, and in 1797 was ordained priest and appointed professor of Arabic at Bologna, but he refused the oath to the Cisalpine Republic. He became professor of Oriental languages, 1803, and librarian of Bologna University, 1815, keeper of the Vatican library, 1833, and cardinal, 1838. He died March 14, 1849. Mezzofanti easily surpasses all other linguists on record. Acquainted with 114 languages and dialects, he spoke at least half that number fluently, composed verses in many, and had a sound knowledge of the chief literatures. See Life, C. W. Russell, 1858.

Mezzo-Soprano. Woman's voice of medium pitch. It possesses something of the full and sympathetic quality of the contralto, but with extended upward range. Its ordinary compass is about:



while exceptional voices will cover about:



See Soprano; Contralto.

Mezzotint. Process of engraving. A copper or steel plate is taken and the "ground" made thereon by means of a "cradle" or rocking tool, which raises a burr all over. This, if inked and printed, would give a uniform black. To obtain the picture, the high lights are scraped away by a scraper,



Mezquit. 1. Branch with foliage and pods. 2. Flower spikes

and then burnished with a burnisher; the middle lights being treated in the same way, though less drastically, and the darkest shadows left intact. In mezzotint, therefore, the process is from dark to light, this being the opposite to other kinds of engraving.

The invention of mezzotint is ascribed to Ludwig von Siegen, an officer in the forces of William VI, landgrave of Hesse; von Siegen was the author of an extant mezzotint portrait of Amelia Elizabeth of Hesse, 1642. He communicated his discovery to Prince Rupert, whom he met at Brussels, and the latter introduced the process into England in 1660, and practised it himself with some success. Evelyn's *Sculptura* (1662) credited him with the actual invention, and for nearly two centuries the error remained uncorrected in Great Britain. During the 17th century, Blooteling and other Dutch engravers in London developed the process, the elder John Smith and Richard Earlom continued to popularise it, and it was in Great Britain that it reached the zenith of perfection towards the end of the 18th century. On the Continent it never really took root.

In England, the decline of painting during the reign of Anne and George I acted as a discouragement to mezzotint, but the latter became again an art of first-class importance with the rise to fame of Reynolds, Gainsborough, Romney, and other English masters, whose manner lent itself specially to reproduction in this medium. James McArdell, J. R. Smith, Valentine Green, S. W. Reynolds, John Jones, and Charles Turner were among the first mezzotinters of this time. The later introduction of steel-faced plates hastened the abandonment of pure mezzotint for a mixed style of mezzotint and line and stipple engraving. Samuel Cousins was one of the best exponents of the "mixed" method. Modern revivalists of the art include Sir H. Herkomer, Sir Seymour Haden, and, in combination with the etched line, Sir Frank Short. See Engraving; Etching.

M.F.H. Abbrev. for Master of Foxhounds.

Mho. In electricity, the unit of conductance or electric conductivity. It is the reciprocal of resistance, the ohm, i.e. 1/ohm, mho being ohm written backwards. The term was introduced by Lord Kelvin.

Mhow. Military station of Central India, Indore State. It is 13 m. S.W. of Indore town, on a height above the Gumber river near the Vindhya Range. Pop. 30,000.

Miagao. Town of Panay, Philippine Islands, in the prov. of Iloilo. It stands on the S. coast, 23 m. W. of Iloilo, and manufactures hemp fabrics. Pop. 21,000.

Miall, EDWARD (1809-81). British politician. Born at Portsmouth, May 8, 1809, he became an



Edward Miall,
British politician

Independent minister. In 1840 he gave up his charge to begin a campaign against the establishment of the Church. In the next year he founded a weekly newspaper,

The Nonconformist, which he edited as long as he lived. He represented Rochdale in Parliament, 1852-67, and Bradford, 1868-74. He died at Sevenoaks, April 29, 1881. See Disestablishment; consult also Life, A. Miall, 1884.

Miami OR GREAT MIAMI. River of Ohio, U.S.A. Rising by several head streams in the W. of the state, it flows about 140 m., generally S.S.W. The Little Miami, which follows a nearly parallel course, enters the Ohio about 5 m. above Cincinnati.

Miami. City of Dade co., Florida, U.S.A., on N. bank of the Miami river. In the centre of a fruit-farming country, it is the S. terminus of the Florida E. coast rly. A subtropical govt. laboratory is established here, and there are sponge fisheries. The normal summer population of about 40,000 increases in the winter season to over 150,000.

Miani OR MEEANEE. Village of India, in Sind. It is 6 m. N. of Hyderabad. Here Sir Charles Napier defeated the Baluchis in 1843 and gave Britain the control of Sind.

Miao OR MIAO-TSE. Chinese name for aboriginal peoples, mostly in S. China, calling themselves Meng. Fair, straight-nosed and wavy-haired people, their principal tribes are the Heh and Yachiao. Once dominating central China, their social customs and primitive animism preserve traces of ancient higher culture.

Miava OR MYJAVA. Town of Czecho-Slovakia, in Slovakia. Formerly in Hungary, it is 48 m. N.N.E. of Bratislava (Pressburg). There are textile manufactures. Pop. 10,100.

Mica (Lat. *micare*, to flash). In mineralogy, a group of minerals characterised by ready cleavage into thin plates. Micas are chiefly made of aluminium silicate with

varying proportions of iron, magnesium, potassium, sodium, etc., and their colours range from colourless to black.

The principal varieties of mica are muscovite, paragonite, lepidolite, biotite, and lepidomelane. Muscovite, or common mica, is a colourless mixture of potassium and aluminium silicate, and under its common name of talc is widely used for lamp chimneys and the doors of stoves on account of its transparency and resistance to changes of heat. It was formerly used for glazing windows, and is also employed for insulating purposes in electricity, in the manufacture of wallpaper and, ground, as an absorbent for glycerin in the manufacture of dynamite. Paragonite is a sodium and aluminium silicate, yellow to green in colour; lepidolite, a rose-coloured potassium, lithium, and aluminium silicate and a source of lithium salts; biotite a dark-green, brown, and black magnesium iron silicate occurring in most granites, gneisses, schists, and a great variety of crystalline rocks; and lepidomelane, a black iron mica. Most of the micas are found in crystalline rocks, and are mined extensively in India and the U.S.A.

Micah. One of the minor prophets. A native of Moresheth, near Gath, and a younger contemporary with Isaiah, he prophesied in the reigns of Jotham, Ahaz, and Hezekiah. Of his prophecies the earlier chapters denounce oppression and drunkenness, and predict the ruin of the nations. Then follow Messianic predictions of restoration and future glory. The closing chapters deal with the controversy between God and His people. See The Book of the Twelve Prophets, G. A. Smith, 1896 (in the Expositor's Bible).

Mica Schist. In geology, name given to a metamorphic rock having a schistose or foliated structure, and composed chiefly of mica and quartz, arranged in alternate irregular bands. The rock cleaves easily along the mica bands, the latter usually being the colourless muscovite, or biotite varieties of mica. Garnet, tourmaline, etc., frequently occur in the rock, which is widely scattered, being found in the Scottish Highlands, N. America, in many parts of Europe, etc.

Micawber, WILKINS. Character in Dickens's novel David Copperfield. A genial and unbusinesslike optimist, he is a rotund speaker, a prolific letter-writer, and always waiting for something to turn up. After failing in all his ventures, he emigrates with his wife and family to Australia, where he

achieves some success, and is made a magistrate. John Dickens, the novelist's father, is said to have furnished the model for Micawber. In an adaptation of David Copperfield by Louis N. Parker, produced



Mr. Wilkins Micawber, the grandiloquent optimist described in David Copperfield. From a drawing by Fred Barnard

at His Majesty's Theatre, London, Dec. 24, 1914, Sir Herbert Tree doubled the parts of Micawber and Peggotty.

Michael (Heb., Who is like God?). Name given to one of the angels in the books of Daniel and Revelation. In Dan. xii, 1, he is described as the great prince which standeth for the people (cf. x, 13, 21). He is thus the champion of the Israelites against the prince-angels of the Persians and the Greeks. In Rev. xii, 7, which speaks of there being war in heaven, he is the victorious leader of the good angels (the Archangel) against the Dragon (the old serpent, he that is called the Devil and Satan) and his angels. See Angel; Archangel; Michaelmas.

Michael (1558-1601). Voivode (governor) of Wallachia, called the brave. Member of the noble family of the Bassaraba, Michael was banished by the voivode Alexander, but deposed him, and became voivode in 1593. In his brief reign he drove the Turks from Wallachia, and then, having come to an understanding with the emperor Rudolf, and with the Turks, succeeded



Michael, Governor
of Wallachia

in uniting, under his rule, nearly the whole Ruman people, 1599-1600, assuming in 1600 the title of voivode of Wallachia and Moldavia, and governor of Transylvania. Threatened by a rising of the Transylvanians, under Sigismund Bathory, aided by Poland, he obtained support from the Imperial government, and defeated Bathory, but a few days later, Aug. 19, 1601, was murdered at the instigation of the imperial general Basta.

Michael Alexandrovitch (b. 1878). Russian grand duke. Born in St. Petersburg, Nov. 22, 1878, he

was a brother of Nicholas II. His marriage to Nathalie Sergeevna, née Scheremetevsky, in Oct., 1911, was morganatic, and in the following Jan. an imperial manifesto relieved



Michael Alexandrovitch, Russian grand duke

him of the duties of regent imposed upon him in Aug., 1904, in the event of the death of the emperor before the attaining of his majority by the heir apparent. In the Great War he commanded a division of Caucasian cavalry in Galicia. At the revolution of March, 1917, Nicholas II abdicated in favour of the Grand Duke Michael, who was arrested by the Bolsheviks after their accession to power, and exiled to Perm, where he was imprisoned. In 1920 it was reported he had escaped to Siam. See Nicholas II; Russia.

Michaelis, GEORG (b. 1857). German statesman. He entered the public service, became president of Breslau, and in 1909 became under-secretary in the Prussian ministry of finance. He came into prominence in connexion with food control in 1917, when he was made Prussian state commissary. After the fall of Bethmann-Hollweg, in July, 1917, he was appointed chancellor and minister president of Prussia, but was dismissed in Nov.



Georg Michaelis, German statesman

Michaelis, KARIN (b. 1872). Danish author. Born at Randers, March 20, 1872, of a family named Beck-Brøndum, she married the poet Sophus Michaelis, in 1905, and gave up a musical training for literature. She published novels which were translated

into several languages. Her work was marked by considerable power of description and a broad outlook on feminine questions. The publication of *The Dangerous Age*, 1910, established her reputation as a European novelist, and aroused a sensation by its candour.



Karin Michaelis, Danish author

Michaelmas. Feast of S. Michael and All Angels, Sept. 29. It was instituted in 487. In England it is a quarter day. In the United Kingdom magistrates are usually appointed at or about Michaelmas. Until 1873 the first term of the legal year was Michaelmas term, Nov. 2-25. The custom of eating goose on Michaelmas Day may have originated in the rural tenant's custom of propitiating his lord with a present of a goose at Michaelmas, when the bird is in fine condition, and also perhaps in the lord's distributing his superfluous geese among his friends.

Michel, AUGUSTIN ÉDOUARD (b. 1855). Belgian soldier. Born May 14, 1855, and educated at the Belgian military school, he entered the army as a lieutenant in the artillery in 1876. He went to the École de Guerre, in 1879, and joined the general staff in Dec., 1881, becoming adjutant-major in 1883. Appointed director of the artillery Dec. 31, 1906, he was director-general of the department in 1910. After commanding the 3rd artillery regiment, he was made lieutenant-general, and given command of the 4th division, with the charge of the 4th military district, Dec. 13, 1913.

When the Great War broke out, he was military governor of the fortress of Namur, and directed its defence against the Germans, who took it on Aug. 24, 1914, after he had made good his retreat. He fought at Termonde, and in the defence of Antwerp in Sept.

Michel took part in the battle of the Yser, in Dec., 1916, headed a mission to Italy, and on April 17, 1918, fought in the operations around Merckem. In the Belgian offensive, Sept.-Oct., he led the northern group of the Belgian army, and in Dec., 1918, was in chief command of the Belgian army of occupation of the Rhine.

Michel, CLÉMENTINE LOUISE (1833-1905). French anarchist and author. Born in the Château Vroncourt, Haute-Marne, April 20, 1833, she went to Paris in 1856 as teacher in a private school. Shortly after she concentrated on social

and political work. Intensely anti-Napoleonic, she joined the Communists, and fought at the Paris barricades, but was taken prisoner, and transported to New Caledonia. After release, under the amnesty of 1880, she returned to Paris. For taking part in anarchist rioting in 1883 she was sentenced to six years' imprisonment, but was released in 1886, and came to London. In the same year she published the first volume of *Mémoires par Elle-Même* (never completed), and *Les Microbes Humains*. These were followed by *Le Monde Nouveau*, 1888. She returned to Paris in 1895, published her work *La Commune*, 1898, and died at Marseilles, Jan. 9, 1905.

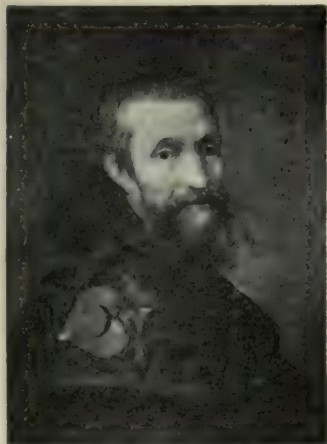


Louise Michel, French anarchist

Michelangelo (1475-1564). Italian artist. On March 6, 1475, was born at Caprese, to the governor of the place, a boy whom he named Michelangelo. The father returned next year to the ancient home of his family, the Buonarroti, in the village of Settignano, overlooking Florence, and there, his foster-mother a stone-mason's wife, the child grew up amongst the stone-carvers. Mallet, chisel, and marble were the toys of his childhood. Early packed off to school in Florence to rid him of vulgar artistic tastes, the thrashings of father and of schoolmaster could not keep the lad from the society of the art students; so that at thirteen, on April 1, 1488, he was apprenticed by his disgusted father to the painter Ghirlandaio, from whom he soon drew the famous plaint, "This boy knows more than I do."

Catching the eye of Lorenzo "the Magnificent" with his first sculpture, the lad was forthwith given rooms in the palace, where he was treated like a son. Living amongst the most famous of the age, the young fellow was soon a prey to his hopeless passion for the beautiful Luigia de' Medici. It was about this time that one of his fellow-pupils savagely struck and broke his nose. On April 8, 1492, his beloved friend and patron Lorenzo de' Medici died; and Michelangelo's boy-companion, the worthless Piero de' Medici, reigned in his stead. In disgust, Michelangelo left for Venice. Unable to get work, he wandered to Bologna, where a gentleman, one Aldovrandi, befriended the penniless youth.

Michelangelo had now to leave Bologna owing to the threats of the jealous craftsmen of the town; so in the springtime of 1495 he returned to Florence to find the beautiful Luigia dead and a republic established. Though but twenty, he was made a member of the general council of citizens. Called to Rome by a cardinal who had bought his Sleeping Cupid as an antique, the young sculptor hurried eagerly to ride to the goal of his ambitions in the June of 1496; he was soon at work on the superb group of his *Pietà*. Unfortunately the money difficulties of his father and family kept the young artist poor in order to send them constant relief; nevertheless, when at 26, in the spring of 1501, he again entered Florence,



Michelangelo Buonarroti

Portrait in the Capitoline Gallery, Rome

he was hailed as the first sculptor of his age. Finding a large discarded block of marble, he wrought out of it his mighty masterpiece the colossal David.

Summoned to Rome by Pope Julius II in 1505, the young artist eagerly set forth on his second journey thereto. The great Pope Julius II, an extraordinary man, ordered a magnificent monument to himself. Michelangelo's design being too huge to set in S. Peter's church, the pope decided to have the church rebuilt by Bramante on a vast scale. Tricked by the pope over money, Michelangelo took horse in a rage for Florence. "Forgiven" and recalled by the pope in 1508, he rode into Rome for the third time, his heart set on finishing the great sculptures for the Julian tomb, only to find that Bramante and Raphael and others, playing on the old pope's superstition, had maliciously suggested Michelangelo being set in-



Michelangelo. *The Holy Family*, an early work, painted in tempera, 1501-5
Uffizi Gallery, Florence

stead to painting the Sistine chapel. Thus it came about that Michelangelo, shutting himself up in the chapel alone, with the fresco dripping on his upturned face, cramped by the terrible fatigue, put himself to the stupendous task, and, four years afterwards, on Nov. 1, 1512, there was revealed to Rome the masterpiece of painting of the Italian Renaissance.

Pope Julius, feeling the end at hand, now ordered Michelangelo to finish the great Julian tomb. Julius, dying four months afterwards, was succeeded by Pope Leo X, a Medici, who ordered Michelangelo instead to Florence to the erection of his great Medicean tomb in honour of the Pope's two brothers lately dead.

Then came the sack of Rome in 1527. Florence shook off the yoke of the Medici, and, Michelangelo, now 52, flung himself into the war of liberty.

But the fall of the city through treachery saw Alessandro de' Medici enter in triumph and Michelangelo a fugitive. However, the anger of the Medicean pope soon cooled, and Michelangelo was torn this way and that by the jealousies rampant over the completion of the two great tombs. Finishing the masterpiece of the Tomb of Giuliano and Lorenzo de' Medici in 1534, he left Florence for ever.

On his reaching Rome for the fourth time, now on the edge of 60, the new pope, the crafty Paul III, compelled Michelangelo to the painting of the vast Last Judgment. It was now in his sixties that he met the second woman



Michelangelo. *La Pietà*: marble group representing the Madonna tending the body of the dead Christ. Executed in 1499, this is the only work ever signed by Michelangelo, whose name appears on the band crossing the breast of the Madonna

S. Peter's, Rome



Michelangelo. Tomb of Giuliano de' Medici, who is represented as a general of the Church. On the sarcophagus are figures of Day and Night. The monument inspired Swinburne's sonnet, *In San Lorenzo*.
Church of S. Lorenzo, Florence

who was so greatly to influence his life—Vittoria Colonna, the first woman of the age, the inconsolable widow of the Marquis of Pescara, was at forty-two to arouse a strange platonic passion in him.

In 1545, at 70, Michelangelo completed his much modified design of the huge Julian Tomb. The following year, Pope Paul III made him architect to complete the great church of S. Peter that Bramante had planned for Pope Julius II. On the morrow of his taking up the huge task, his romantic friendship with Vittoria Colonna ended with her death.

Family griefs fell fast, but his devotion to his kin bore rich fruit in his old age. Wealthy, frugal of habit, he poured forth vast designs. Sleeping little, working at night, a candle in his cap, at his sculpture, he lived in lonely communion with his own soul. But his vigorous old body could not resist the severe chill which took him to his armchair, where he died a little before five of the clock in the afternoon of Feb. 18, 1564. Michelangelo, with colossal gifts, uttered his age like the giant he was. He claimed to be a sculptor alone, yet as poet, painter, and architect he reached

to vast repute—he signed his immortal paintings in the Sistine chapel as Michelangelo, sculptor. He stands forth rugged, stern, honest, uncompromising, virile, as the mighty seer of the Renaissance, like some ancient Hebrew prophet. Over all he wrought is a tragic gloom, for his stern eyes saw the failure of Italy to reach to the splendid realm of Liberty. Entertaining few friends, and shunning the society so dear to Raphael, he wrought his solitary art with his own wondrous hands, scorning the courtier

ways of Raphael, arrayed in magnificence, and working amidst his crowd of assistants. See Adam; Art; Capitol; Farnese Palace; Isaiah; Jesus Christ; Moses.

Haldane MacFall

Bibliography. Life with trans. of many of his poems and letters, J. S. Harford, 1857; Life and Works, C. Heath Wilson, 1876; Lives, J. A. Symonds, 1899; A. Condivi, Eng. trans, C. Holroyd, 1911.

Micheler, JOSEPH ALFRED (b. 1861). French soldier. Born at Phalsbourg, Sept. 23, 1861, and educated at St. Cyr, he entered the French army as a lieutenant of infantry. Oct., 1882. He served in Algeria, 1890–98, 1903–5, and 1909–11, and in Dec., 1912, was colonel of

the 29th infantry regiment. After the outbreak of the Great War he was promoted brigadier-general, and in Oct., 1914, was chief of the staff of the 6th army corps. Early in 1915 he became chief of the

staff of the First Army, and in Aug. commanded the 53rd infantry division. As temporary general of division, he was placed at the head of the 38th army corps in March, 1916, and in April commanded the Tenth Army. Full general of division in June, 1916, he took part in the battle of the Somme. In Dec., 1916, he was appointed assistant to the commander-in-chief, and in 1917 successively commanded the First and Fifth Armies. He retired in May, 1919.

Michelet, JULES (1798–1874). French historian. Born in Paris, Aug. 21, 1798, he was educated at



Jules Michelet,
French historian

the Collège Charlemagne, and became a teacher. In 1830 he was head of the historical section of the royal archives, and deputy to Guizot at the Sorbonne. At this period

appeared the first volume of his history of France (1837–67) which, with the History of the French Revolution (1847–53), gives him a high place among French historians. An ardent democrat, his lectures were prohibited in 1851, and from that time to his death on Feb. 9, 1874, he lived in retirement.

Michelet wrote some polemical books and pamphlets directed against the party of reaction and against the Jesuits. His conception of history has been defined as a "resurrection of integral life." His powers of picturesque and vivid description are seen at their best in the early volume of his great history, dealing with the Middle Ages. He had the imagination and the poetic genius to interpret the true meaning of the Gothic period. He loved the soil and the humble people of France, and his portrait of Joan of Arc is a classic. But he had not the impartiality and clearness essential to the making of the perfect historian. His works on nature: *The Bird*, 1856, *The Insect*, 1858, *The Sea*, 1861, *The Mountain*, 1868, though unscientific, are eloquent and imaginative.

Michelham, HERBERT STERN, 1ST BARON (1851–1919). British financier. Born Sept. 28, 1851, son of Baron Hermann de Stern of the



1st Baron Michelham,
British financier

Langley

banking firm of Stern Brothers of London, Paris, and Belgium, as a young man he entered the business which he subsequently developed. Inheriting about £2,000,000 from his father, he increased this fortune, and in 1911 severed his connexion with Stern Brothers and started the separate banking business of Herbert Stern & Co. He was interested in racing and art, and was a liberal philanthropist. He presented to the nation the quadriga which surmounts the arch on Constitution Hill, London, and helped to purchase famous pictures for the National Gallery. During the Great War he established convalescent homes and hospitals, including that of the Hotel Astoria in Paris. Created a baron in 1905, he died Jan. 7, 1919, and was succeeded in the peerage by his elder son Hermann Alfred Stern (b. 1899).

Michigan. Lake of the U.S.A. The second largest of the five great lakes of North America. Entirely within the U.S.A., it is 320 m. long, has a mean breadth of 65 m., and covers an area of 22,400 sq. m. It lies 581 ft. above sea level, and its greatest depth is 360 ft. The lake, which has few large indentations apart from Green Bay and Grand Traverse Bay, has low, sandy shores, and navigation is rendered dangerous by heavy winds and the absence of good harbours. Communication with Lake Huron is provided by the Strait of Mackinac and with the Mississippi river by the Chicago Drainage Canal. The only islands are a group in the N., the largest of them being Manitou 50 m. long, and the chief streams entering the lake are the Manistee, Muskegon, Menominee, and Fox. The trout, salmon, and other fisheries are important. Chicago, Milwaukee, Manistee, and Sheboygan are among the cities on the shores of the lake.

Michigan. Northern state of the U.S.A., known as the Peninsula State, from its division by Lake Michigan into two peninsulas. The N. peninsula is traversed by low mountains, and is rich in minerals; the S. peninsula is hilly in the N. with a prairie expanse towards the S. Thousands of small lakes break the surface, while the Muskegon, Grand, Kalamazoo, and many other rivers supply much water-power for the various industries, but are often unnavigable. Maize, wheat, potatoes, hay, and sugar-beets are extensively cultivated, and iron and copper mined.

The iron ore is chiefly a rich red and brown haematite mostly obtained from the Marquette range in the N. peninsula, and the copper

is chiefly drawn from Keweenaw Peninsula on Lake Superior; silver, salt, coal, Portland cement, building-stones, and glass sand are also worked. The busiest manufacturing industries are connected with lumber and timber products, cereals, metals, machinery, and motor cars and wagons. The state university, at Ann Arbor, the State Agricultural College, at Lansing, and the College of Mines at Houghton, are among numerous educational institutions. Besides 9,000 m. of steam and 980 m. of electric railroad, the St. Mary's Falls Ship Canal ("Soo" canal) is available for transport. Michigan was admitted to the Union in 1837. Two senators and 13 representatives are returned to Congress. Lansing is the capital, and Detroit the chief city. Area 57,980 sq. m. Pop. 3,668,400.

Michigan City. City of Indiana, U.S.A., in Laporte co. It is on Lake Michigan, 55 m. by rly. E.S.E. of Chicago, and is served by the Lake Erie and Western and other rlys., and by lake steamers. The seat of a protestant Episcopal bishop, it contains the Northern Indiana State Prison. An extensive trade is carried on in lumber, iron ore, and salt, and chairs, knitted goods, and rly. cars are manufactured. Michigan city was organized in 1832, incorporated in 1837, and chartered as a city in 1867. Pop. 19,500.

Michoacan. Maritime state of Mexico. Bordered S. by the Pacific, and covering an area of 22,621 sq. m., it is generally mountainous, the N. portion belonging to a great plateau, and the S. portion, which slopes away to the sea and the Mescala or Balsas river, consisting of a series of wooded mt. chains and productive valleys. It is watered by the rivers Lerma and Balsas and several smaller streams, and contains a number of large lakes, the principal being the Cuizéo and Patzcuaro, and part of Chalapa. Cereals, sugar, coffee, and tobacco are cultivated, and gold, silver, lead, iron, and coal are mined. Railways are undeveloped, and serve only the N. districts. The capital is Morelia. Pop. 1,003,500.

Mickiewicz, ADAM (1798-1855). Polish poet. Born near Novogrodek, Lithuania, Dec. 24, 1798, and educated at the university of Vilna, he was arrested in 1824 as a political suspect, and banished to the interior of Russia. He formed a friendship with Pushkin, and wrote a series of beautiful sonnets on the Crimea, which he visited in 1825. He composed several epics, *Dziady*. 1823-27 on the popular

festival in honour of ancestors, *Grazyna*, 1827, and *Konrad Wallenrod*, 1828, both of which cele-



Adam Mickiewicz,
Polish poet

brate the national struggle of the Lithuanians against the Teutonic Knights. Permitted in 1829 to travel abroad, Mickiewicz, after meeting Goethe at Weimar, went to

Rome, where he wrote the epic *Pan Tadeusz*, his finest work, published in 1834 (Eng. trans. 1886). The scene is laid in Lithuania on the eve of Napoleon's Russian campaign, and the country and its inhabitants are described with knowledge and insight.

After further wanderings, Mickiewicz settled in Paris as professor of Slavonic literatures at the Collège de France, 1840-44, but was dismissed for political propaganda in his lectures. In 1848 he helped to organize the Polish legion in Italy. Sent by Napoleon III to Constantinople to form Polish regiments for the Crimean War, he died in that city, Nov. 26, 1855. *See Works*, 8 vols., 1858; *Life*, by M. M. Gardner, 1911. *Pron.* Misk-yevitch.

Micmacs (allies). North American Indian tribe of Algonquian stock. Inhabiting, at the discovery of America, Nova Scotia and adjacent regions, three of them were taken to England by Sebastian Cabot in 1497. They were the most primitive, because the most isolated, of the eastern Algonquins (q.v.). They numbered in 1916, 3,590, with a remnant in Newfoundland.

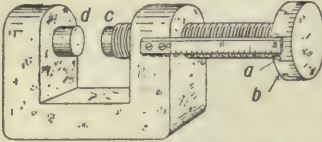
Microcosm (Gk. *mikros*, small; *kosmos*, world). Term applied by the mystics of the 17th century to man as the world in little, the spiritual mirror of the macrocosm, the great world or universe. The movements of the life of the microcosm were supposed to correspond exactly with the movements of the life of the macrocosm. Microcosm is the title of a philosophical work by Lotze (q.v.). *See Universe*.

Microcosmic Salt. Hydrogen ammonium sodium phosphate, $\text{NH}_4\text{NaHPO}_4 \cdot 4\text{H}_2\text{O}$. Its composition was investigated by Marggraf, and subsequently by Proust. It was made originally from urine, but is now prepared by mixing hot strong solutions of ammonium chloride and sodium phosphate. It is a crystalline body which melts to form a glassy mass of sodium metaphosphate, and is largely used in blowpipe work for dissolving metallic oxides.

Micrograph (Gr. *mikros*, small; *graphein*, to write). Instrument for microscopic writing. The word is also used occasionally as a contraction for a micro-photograph, i.e. a photograph of a microscopic object.

Micromhm. In electricity, the unit of resistance equal to one millionth of an ohm (*q.v.*).

Micrometer (Gr. *mikros*, small; *metron*, measure). Instrument for making more accurate linear mea-



Micrometer. Plain screw micrometer: *a*, straight edge; *b*, divided head; *c*, end of screw; *d*, stop between which and *c*, the object being measured is held

By courtesy of Percival Marshall & Co.

surements than is possible with a simple rule or scale. The most common form is the micrometer screw, which depends upon the fact that if a screw is completely rotated, its point will move through a distance equivalent to that between two consecutive threads. By making the pitch small and by attaching to its base a graduated head of comparatively large diameter it is possible to read a fraction of a rotation and thus measure with great accuracy the distance moved over by the point of the screw. For example, if the pitch of the screw be $\frac{1}{50}$ th of an inch, the point of the screw advances that distance for a whole turn. If the head attached to the screw be divided into 500 equal parts, then one division on this head corresponds to a movement of the end of the screw equal to the one-ten-thousandth of an inch.

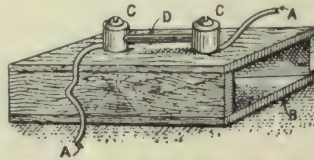
In a telescope the micrometer is attached to a framework of wires fitted over the eyepiece. The micrometer screw alters the position of movable wires with regard to a central one and facilitates the measurement of small angular distances among neighbouring stars. It was invented by William Gascoigne in 1638. See Calipers; Telescope.

Micronesia (Gr. *mikros*, small; *nesos*, island). Collective name of several groups of small islands in the Pacific Ocean. They are situated between the equator and lat. 20° N. and long. 130° to 180° E. The chief are the Ladrone, Caroline, Marshall, Gilbert, and Pelew Archipelagoes, all separately described. Politically they were apportioned among Great Britain, the U.S.A., and Germany, but since the Great

War the islands belonging to the latter have come under mandate to Japan.

Micronesian. Term denoting the inhabitants of the diminutive islands N. of Melanesia in the W. Pacific. First occupied by a Papuan, then by an Indonesian immigration, this group was afterwards affected by other racial and cultural influences, especially Malayan, Japanese, and Samoan. Micronesians are slenderer, shorter, darker, hairier, and longer-headed than the Polynesians. Local forms of dress and equipment, the semi-divine status of the chiefs, and the veneration of stone pillars, sometimes stone-circled, are reminiscent of a megalithic domination.

Microphone. Instrument for the intensification of sound. The failure of the well-known Bell transmitter to carry sound over long distances led Professor Hughes to invent the microphone in 1878. The instrument depends upon the fact that, if there are loose contacts in an electric circuit, the resistance



Microphone. Simple carbon microphone. *B*, hollow deal box, open both ends; *C*, carbon blocks; *D*, carbon pencil; *A*, wires to telephone and battery. *D* rests lightly at each end in holes in *C*

By courtesy of Percival Marshall & Co.

of the circuit varies as sound waves cause the contacts to vibrate. By suitably arranging the loose contacts, an exceedingly sensitive instrument can be constructed, responding to even the faintest sounds.

Many forms of microphone are extensively used. In the Hunningscum-Deckert microphone a funnel-shaped mouthpiece concentrates the sound waves on to a thin disk of carbon. The surface of a second carbon plate is cut into small pyramids, and the space between the two plates is filled with carbon granules which are prevented from settling into a close mass by the shape of the second carbon plate. The vibration of the first disk presses and releases the carbon granules alternately, so causing variation of electrical resistance. See Air Defences; Telephone.

Micro-photography. Art of photographing very small objects. Micro-photographs are usually taken for the purpose of subsequent magnification by projecting upon a screen by an optical lantern, or

for the purpose of making illustrations. Such photographs are taken by a camera with a long bellows which fits over the eyepiece of the microscope. Photographs may be taken by sunlight or artificial light.

Microscope (Gr. *mikros*, small; *skopein*, to look at). Optical instrument for the examination and magnification of small objects. In its simplest form, that of a single lens (*q.v.*), it is prehistoric, for the phenomenon of magnification by a curved transparent disk of material must have been noticed in the earliest times. But the high-powered compound microscope is a comparatively modern invention.

Early observers found that the single lens gave a coloured and distorted image, and it was not until the invention of the achromatic lens (*q.v.*) by Chester Moor Hall, 1729, and John Dollond, 1752, that any great advance was made in the use of the instrument. The theoretical researches from 1873-81 of Professor E. Abbe, combined with the practical skill of the German glass-maker Dr. Schott, brought about an enormous increase in the powers of the microscope and laid the foundation of modern microscopy. Sir Almoth Wright and J. J. Lister, the father of Lord Lister, also did much to discover the principles of the modern scientific microscope.

The simplest form of microscope consists of a magnifying lens at one end of a tube and another lens at the other end, serving as an eyepiece. All modern microscopes are constructed on this principle, the two simple lenses being replaced by two complicated systems of lenses. The system nearest the object being examined is called the objective, and that nearest the eye the eyepiece. The objective is the more important part, and may consist of a large number of lenses of varying powers and properties according to the type of microscopic work being undertaken. Its function is to collect the rays of light from the object and bring them to the focal image.

The strain on one eye of examining objects with a microscope is very great, and in 1860 F. H. Wenham designed a binocular microscope with two tubes and two eyepieces, which has considerably lessened the strain of the work. The light rays from the objective are split up by a prism, and the two images combined to give what is known as stereoscopic vision.

With the improvement in the composition of the glass used in microscopes there came a very great

improvement in the definition of the image obtained. With the discovery of the way to make lenses out of molten quartz it became possible to construct a microscope which could be used with ultra-violet light and enable objects to be examined that are only one-240,000th of an inch in diameter. A further advancement in microscopy has been made in recent years by the use of polarised light, enabling objects one-sixth of a millionth of an inch in size to be examined. The combined use of the microscope and the cinematograph holds out possibilities of the study of the ultimate constitution of matter that may have a revolutionary effect on the progress of mankind. See Achromatic Lens; Lens; Metal-lurgy; Optics.

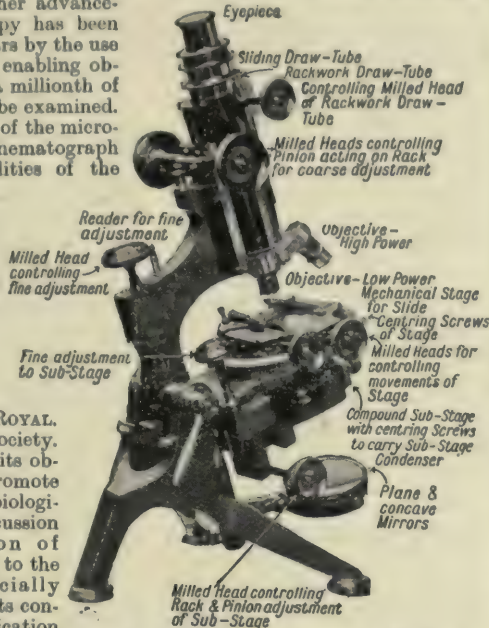
Microscopical Society, ROYAL. British learned society. Founded in 1839, its objects are to promote microscopic and biological science by discussion and publication of matters pertaining to the microscope, especially improvements in its construction and application to biological research. The society publishes a quarterly journal and has its headquarters at 11, Chandos Street, Cavendish Square, London, W.

Microtasmeter (Gr. *mikros*, small; *tasis*, extension; *metron*, measure). Instrument for the measurement of small variations of temperature or moisture. Invented by Thomas Edison, it acts by the effect of the pressure of an expanding rod of vulcanite for temperature, or of one containing gelatin for moisture, on the electrical resistance of a piece of carbon placed in the circuit of a galvanic battery. The instrument has the disadvantage of not recovering automatically its original electrical resistance when the pressure is removed. See Bolometer.

Microtome (Gr. *mikros*, small; *tome*, cutting). Instrument for cutting thin sections of organic tissue, etc., for microscopic examinations. The substance to be cut is either frozen in gum, etc., or embedded in paraffin or celloidin, which enables slices of any thickness between .01 mm. and .005 mm. to be obtained.

The instrument comprises a razor or a knife-edge which may

itself move or remain stationary; in the latter case the specimen to be sliced slides over the cutting edge. In the Cambridge rocking microtome, the substance to be cut is embedded in paraffin contained in a tube, which can be advanced towards the cutting edge in accordance with the thickness of

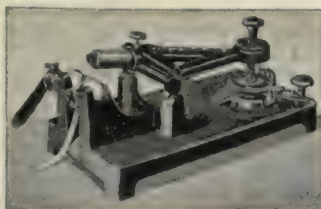


Microscope. Descriptive photograph illustrating the main parts of a high-power microscope

the specimen required, the degree of movement of the tube being read off on an arc graduated in thousands of a millimetre.

Micturition. Act of voiding urine. Undue frequency of micturition is a frequent symptom in affections of the kidney and bladder. Retention of the urine may be due to stricture, enlargement of the prostate gland, which is likely to occur in elderly men, or a stone blocking the urethra, the channel through which the urine is voided.

Midas. Legendary king of Phrygia. Having done a favour to Silenus, the companion of the god Bacchus, he was told by the god



Microtome. Delicate instrument for preparing specimens of tissue for the microscope

By courtesy of Surgical Mfg. Co., Ltd.



Microscope. Sectional diagram showing how the light passes from the reflecting glass through the condenser to the object on the slide and thence through lenses to the eye

that whatever he asked of him would be granted. Midas asked that whatever he touched should be turned into gold. Finding that even his food turned to gold before it reached his lips, he asked Bacchus to revoke the gift. By command of the god he bathed in the springs of the river Pactolus, and the baleful power left him; from that time onwards the river was noted for its golden sands. Midas was once chosen to decide in a contest on the flute and the lyre between Pan and Apollo. Midas having decided in favour of Pan, Apollo changed the king's ears into those of an ass. Midas successfully concealed the deformity from everyone except his barber, who was so oppressed by the secret that, to relieve his feelings, he dug a hole into the ground and whispered into it the words "King Midas has the ears of an ass." From here grew up a reed which, when moved by the wind, divulged the secret to the world. Midas was the name of many kings of Phrygia. *Pron. My-das.*

Mid-Channel. Tragedy by A. W. Pinero. It was produced at the St. James's Theatre, London, Sept. 2, 1909. A story of unhappy marriage, it tells how the wife of a wealthy stockbroker, deserted both by her husband and by her lover, commits suicide.

Middelburg. Town of the Netherlands. Capital of the prov. of Zeeland, it stands nearly in the centre of the island of Walcheren, 4 m. by rly. N.N.E. of Flushing. The industries include engineering,



and furniture and tobacco making. The town contains many old houses, and is encircled by a strip of water known as the Vest. The Gothic Stadhuis, with a tower 180 ft. high, dates from the early 16th century and has a striking façade, with numerous statues of the counts of Holland. The abbey of S. Nicholas, founded in 1106, and once a Premonstratensian house, is used for administrative purposes, has cloisters of the 16th century, and contains interesting tapestries. The new church, formerly the abbey church, has a lofty tower, rebuilt 1718, with fine carillon. In the Middle Ages Middelburg was a cloth centre. Pop. 19,500.

Middelburg. Town in the Transvaal, S. Africa. It is 95 m. by rly. E. of Pretoria. Near by are extensive coal-mines. It is a growing trading centre with rly. connexion to Pretoria, Johannesburg, and Lourenço Marques. Middelburg district is a large area bounded N.W. by the Olifants River. Pop. 4,100. There is another Middelburg, a town in Cape Province, 91 m. from Graaf Reinet.

Middle Ages OR MEDIEVAL PERIOD. Name given to the ten or eleven centuries beginning with the 5th of our era, and ending with the 15th—the centuries intervening between what are called Ancient and Modern times. Definite dates for the beginning and the end of the Middle Ages can only be assigned arbitrarily; those most in favour are the sack of Rome by Alaric the Goth, 410, or the deposition of the last Roman emperor in Italy, Romulus Augustulus, 476, and the capture of

Constantinople by the Turks, 1453, or the discovery of America by Columbus, 1492. The essential facts are that early in the fifth century the old Roman civilization of Western Europe was submerged by the barbarian flood of Teutonic invasion; a new civilization gradually emerged in a new Europe; and then the new Europe awoke gradually to fresh intellectual ideas, and suddenly to the existence of a whole new world outside itself.

The Middle Ages again fell into two main periods, roughly known as the Dark Ages and the Age of



Middelburg, Holland. Town Hall and market square. Top, left, the Oost Kerk, one of the principal churches

Chivalry, separated by the epoch of the Norman expansion in the second half of the 11th century and the opening of the prolonged contest between the empire and the papacy. Some writers restrict the term Middle Ages to the Age of chivalry. See Feudalism; History.

Middleboro. Town of Massachusetts, U.S.A., in Plymouth co. It is a summer resort on the Nemasket river, 34 m. S. of Boston by the New York, New Haven and Hartford rly. Middleboro was settled in 1662 and incorporated seven years later. Pop. 8,800.

Middle Congo OR MOYEN CONGO. Administrative dist. of the Belgian Congo, Africa. The Inkisi, Kwango, Kasai, and Congo constitute the greater portion of its boundaries; in the S.W. it is crossed by the rly. from Kinshasa through Madimba towards Matadi. See Congo, Belgian.

Middleman. THE. Drama by H. A. Jones. It was produced Aug. 27, 1889, at the Shaftesbury Theatre, London, where it ran for 182 performances. The story relates the ani-

mosity of Cyrus Blenkarn, an elderly potter, against Joseph Chandler, the employer, who has fattened on his inventions, and whose son has eloped with Blenkarn's daughter, Mary. E. S. Willard played Blenkarn, William Mackintosh, Chandler, and Maude Millett, Mary Blenkarn. See Acting.

Middlemarch. Novel by George Eliot, originally published in eight parts, 1871-72, with the sub-title, A Study of English Provincial Life. It is a story mainly of a modern S. Theresa, Dorothea Brooke, who first, from zeal rather than love, marries the stiff, scholarly, middle-aged egoist, Casaubon, and later his cousin and opposite, Will Ladislav. Other romances are interwoven with hers.

Middlemass, MARY JANE (1834-1919). British writer. Better known as Jean Middlemass and one of the most prolific writers of wholesome stories in the last quarter of the 19th century, all her novels convey a distinct moral lesson. Her most popular works include Touch and Go, 1877; Innocence at Play, 1880; A Girl in a Thousand, 1885; A Woman's Calvary, 1903; At the Altar Steps, 1910. She died Nov. 5, 1919.

Middlesbrough. County and mun. borough, seaport and market town of Yorkshire (N.R.). It stands on the S. side of the Tees estuary, 3 m. from Stockton and 238 from London, being served by the N.E. Rly. The chief buildings are those erected for municipal purposes, including the town hall and free library, the royal exchange, Dorman museum, and Roman Catholic cathedral. Albert Park was the gift of H. W. F. Bolckow, the first M.P. for the borough. The commercial centre of the ironstone mines of the Cleveland district, Middlesbrough has foundries, furnaces, and other works for the production of iron and steel on an enormous scale. Engines, boilers, and other kinds of iron and steel goods, chemicals.



Middlesbrough, Yorkshire. The docks with the transporter bridge in the background

and concrete are made, and salt is produced. The river forms a harbour protected by two breakwaters; in it are modern and capacious docks. Shipbuilding is another industry. Two members are returned to Parliament.

Middlesex' arms

In 1820 the first houses were begun, and in 1830 a rly. line linked it with Stockton. Industrial establishments soon made their appearance. In 1842 the docks were opened, and, with the development of the Cleveland ironstone mines, its growth was very rapid. It was made a borough in 1853. Market day, Sat. Pop. (1921) 131,103.

Middlesex. County of England. Wholly inland, its area is 233 sq. m. On the S. the Thames separates it from Surrey, as on the E. the Lea separates it from Essex. Other rivers are the Crane, Colne, and Brent. The surface is fairly level, although there is a range of hills in the N., and the soil is fertile.

Brentford is the county town, but much of the business is done in London. The main fact, indeed, about the county is that it is in the London area, as represented by the metropolitan police district and that of the central criminal court. Save for a small and decreasing rural area in the W., it is covered with towns and urban districts, suburbs of London.



Middlesex arms

These include the boroughs of Acton, so made in 1921, Ealing, and Hornsey, and the populous urban districts of Willesden, Edmondton, Chiswick, Enfield, Finchley, and Tottenham. In the county, too, are Hampton, Harrow, Staines, Southall, Teddington, and Twickenham. It sends ten members to Parliament, and is in the diocese of London, except for a small portion in that of Oxford. It is still, as it was at the time of Domesday, divided into six hundreds.

Middlesex, so named because it was between the E. and the W. Saxons, is one of the older English counties. At the time of Domesday it was largely a forest area, and a little later was held by the citizens of London. In 1888 part of the county, over 31,000 acres, was taken away for inclusion in the new county of London. Pop. (1921) 1,253,164.

LITERARY. One of the earliest humorous poems in the English language is the 14th century skit upon knightly tourneys, *The Tournament of Tottenham*. In the Elizabethan drama there are two plays with their scenes laid in Edmondton, the anonymous *Merry Devil of Edmondton*, and Dekker's *Witch of Edmondton*. Drayton in his *Polyolbion* sings of the fine cornlands where now are London's outer suburbs in the west. In the 18th century Pope laid the scene of *The Rape of the Lock* in Hampton Court; and Mark Akenside found inspiration in Golder's Hill. Scott describes Enfield Chase in *The Fortunes of Nigel*.

Recollections of Enfield inspired a large part of Keats's poem, *I Stood Tiptoe upon a Little Hill*. Hood wrote of the work of a Bedford topiary artist in his poem, *The Two Peacocks*. Cobbett has passages on parts of the county in his *Rural Rides*. Dickens describes Bill Sikes on burglary intent as taking Oliver

Twist by Isleworth, Hampton, and Shepperton; Thackeray, in memory of his own schooldays there, makes Henry Esmond pass part of his early life at Ealing; while Harrison Ainsworth has much



Middlesex Hospital. Main entrance and courtyard of the principal building

of the county in his *Jack Sheppard*, many of the scenes of which are laid in the Willesden district. Matthew Arnold's association with Laleham inspired William Watson's poem, *In Laleham Churchyard*.

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Middlesex Hospital. London hospital founded in 1745. Situated in Mortimer Street, London, it has over 400 beds, and a special feature is the cancer department, established in 1792. A cancer wing was opened in 1900, and in connexion with it there are research laboratories for the purpose of investigating the nature and causes of malignant disease. At the Bland-Sutton institute for clinical pathology, the antiseptic flavine was discovered in 1916. There is an excellent medical school.

Middlesex Regiment. Regiment of the British army. Officially known as The Middlesex Regiment



Middlesex Regt. badge

(Duke of Cambridge's Own) it is an amalgamation of the 57th and 77th Foot, raised in 1755 and 1787 respectively. For a number of years the men served as marines with much credit, and later took part in the Mysore War, greatly distinguishing themselves at the capture of Seringapatam. Its proudest fighting records were gained in the



Middlesex. Map of the English county north of the Thames, and one of the home counties

Peninsular War, when among other feats the valour of the regiment in dying face to the foe at Albuera, earned it its famous title of Die-Hards. Further battle honours were gained during the Crimean War, and in the New Zealand War. During the South African War the Middlesex formed part of General Buller's force, and was specially mentioned by that commander for gallantry at Spion Kop. Before the Great War this was one of the few regiments which had four regular battalions. In the latter it had, in addition to the regular and special reserve battalions, four territorial, and a large number of service battalions, also a public schools, two footballers', a number of public works battalions, and a yeomanry unit.

The 1st and 4th were in the expeditionary force, fighting in all the big battles of Aug.-Nov., 1914. The 2nd and 3rd distinguished themselves in France and Flanders, 1915, the former making a fine charge at Neuve Chapelle. The 11th, 12th, 13th battalions fought at Loos, and the 7th and 8th at the second battle of Ypres, while the 2/10th fought in Gallipoli in that year. In 1916 the Middlesex were engaged in the battle of the Somme, the 12th distinguishing itself at Trônes Wood. During 1917 their record in France was equally fine, especially in the battles of Arras, Cambrai, and Ypres III, while units of the regiment fought in Palestine in that year. The 2nd battalion made a heroic stand in the German offensive of March-April, 1918, at Mory and Villers-Bretonneux, on the Aisne in May-June, and helped to breach the Drocourt-Quéant line in Sept. Other battalions took part in the defence battles of that year, and in the final offensive against the Germans, Aug.-Nov. Middlesex battalions, under Colonel John Ward, fought against the Bolsheviks in Siberia, 1917-18, and a battalion of them showed heroism when their transport, the Tyn-dareus, was mined off the southern-most part of S. Africa, Feb. 6, 1917. The regimental depot is at Mill Hill. See with the Die-Hards in Siberia, Col. John Ward, 1920.

Middleton. Mun. bor. and market town of Lancashire, England. It is 6 m. N. of Manchester, on the L. & Y.R. It received a charter for a weekly market in 1791. There are large silk and cotton factories, calico printing works, iron-

foundries, chemical works, and extensive collieries in the neighbourhood. Water is supplied by the Heywood and Middleton Water Board. The council supplies gas and electricity for tramways and light railways. Middleton and Prestwich form a co. division to send one member to Parliament. Market day, Friday. Pop. (1921) 28,309.

Middleton, EARL OF. Scottish title borne from 1656 to 1695 by the family of Middleton. John Middleton of Middleton, Kincardineshire, served Charles I in Scotland during the civil war. He was taken prisoner at Preston, and again at Worcester, but he escaped to France and joined the circle around Charles II. In 1653 he was sent to Scotland to lead a rebellion, but this was a failure. Charles II created him an earl in 1656, and after his restoration made him commander-in-chief. He died at Tangier in June, 1674. Middleton's son Charles, the 2nd earl (d. 1719), was a secretary of state under James II. He followed the deposed king to France, and was secretary of state to him and to his son, the Old Pretender, until 1713. The title was taken from him in 1695, but it was claimed by the Middletons until the death of John, nominally the 3rd earl, about 1746.

Middleton, THOMAS (c. 1570-1627). English dramatist. Born in London of a good family, he was a



Thomas Middleton,
English dramatist
After J. Thurston

member of Gray's Inn, and wrote some satirical tracts. About 1600 he turned his attention to the stage, composing 15 plays independently, and seven in collaboration with Dekker, Rowley, and others, and became city chronologer in 1620. He was buried in the churchyard of Newington Butts. His work is marked by coarseness, pointed dialogue, subtle satire, and penetrating wit. Of his comedies of London manners, *A Trick to Catch the Old One* is the most notable. His best independent tragedy is *Women Beware Women*. With Rowley he wrote the powerful tragedy of *The Changeling*, and the comedies *The Spanish Gypsy* and *A Fair Quarrel*. His satirical play, *A Game at Chess*, 1624, was immediately popular, but suppressed at the request of the Spanish ambassador, Gondomar. See *Works*, edited by A. H. Bullen, 8 vols., 1885-86.

Middleton-in-Teesdale. Market town of Durham, England. It stands on the Tees, 16 m. E.N.E. of Appleby on the N.E. Rly. Lead and iron mining are the principal industries. Market day, Friday. Pop. 1,900.

Middletown. City of Connecticut, U.S.A., the co. seat of Middlesex co. It is on the Connecticut river, 15 m. S. of Hartford, and is served by the New York, New Haven and Hartford rly. and by steamers. It contains the Wesleyan University and the Berkeley School of Divinity. Industries include the manufacture of cotton and silk goods, blankets, boots and shoes, pumps and pump machinery, chemicals, etc., and the neighbourhood produces tobacco and fruit. It is connected with Portland across the river by a drawbridge. Organized in 1650, Middletown was called Mattabesec until two years after its incorporation in 1651, and became a city in 1784. Pop. 13,600.

Middletown. City of New York, U.S.A., in Orange co. It is on the Wallkill river, 65 m. N.W. of New York City, and is served by the Erie and other rlys. Industries include the manufacture of rly. cars, motor tyres, etc., and in the neighbourhood agriculture and dairy farming are carried on. Middletown was incorporated in 1848, and became a city in 1888. Pop. 18,400.

Middletown. City of Ohio, U.S.A., in Butler co. It is on the Miami river, 33 in. N. of Cincinnati, and is served by the Cincinnati, Hamilton and Dayton and other rlys. It manufactures paper, tobacco, steel goods, cycles, gas-engines, etc. Settled in 1794, Middletown was incorporated in 1833. Pop. 23,600.

Middlewich. Market town and urban dist. of Cheshire. It is 6 m. from Northwich, near the river Dane, and is served by the L. & N.W. Rly., and the Trent and Mersey canal. The chief building is the old church of S. Michael, and the chief industry the manufacture of salt, which is extracted from the brine springs here. Chemicals and condensed milk are also made. Middlewich is in the centre of the wiches, or salt towns, hence its name. Market day, Tues. Pop. 4,900.

Middlings. Technical term used in flour milling and in metallurgy. In flour milling, it is applied to a mixture of broken up bran or husk, with a small proportion of flour mostly adhering to the bran. It is one of the so-called "offals" of the old process of flour milling, and is used for poultry and pig feeding. A newer



Middleton
borough arms

meaning refers to a product of the modern process of flour-milling, by roller mills. These first break up the grain of the wheat into a product which apart from the bran may be separated into three grades known as semolina, middlings, and dust, which are subsequently milled by other rollers to flour.

In metallurgy, the term refers to a product of the grading or concentration of ores. This grading may divide the ore into two parts only, the one rich in metal and the other worthless; but frequently there are three products, a rich one ready for immediate smelting or other treatment; an intermediate one which will be submitted to a further preliminary treatment; and a third which is worthless, and is at once rejected. These are known respectively as heads, middlings, and tailings. *See Metallurgy; Milling.*

Midge. Name applied vaguely to many dipterous or two-winged insects resembling small gnats, but correctly restricted to the family Chironomidae. They may be seen on summer evenings in dense swarms, and are often mistaken for gnats. The majority lack the skin-piercing proboscis of the gnat, but one genus has lance-like jaws capable of drawing blood. Many mischievous insects, as the Hessian and wheat fly, also go by the name of midge. *See Gnat; Hessian Fly; Insect.*

Midhat Pasha (1822 - 84). Turkish statesman. Born in Bulgaria, he entered the Turkish civil service, rose rapidly, and in 1856 was charged with the repression of brigandage in Rumelia. During his governorship of Bulgaria, 1862-67, he carried out important reforms. At the end of 1867 he entered the government as minister of public works. Becoming grand vizier in 1876, he was a prime mover in the deposition of Abdul Aziz. Under Abdul Hamid he was again grand vizier, and drew up the draft constitution of the Ottoman Empire, but was banished in Feb., 1877. Allowed to return in 1878, he was nominated governor of Syria. Sentence of death passed upon him in 1881, on a charge of murdering Abdul Aziz, was commuted to banishment through the representation of the British Government, and he died in Arabia, May 8, 1884. *See Life, Ali Haydar Midhat, 1903.*



Midhat Pasha,
Turkish statesman



Midhurst, Sussex. Ruins of Cowdray Castle, a Tudor mansion formerly the seat of the earl of Egmont

Midhurst. Market town of Sussex. It stands on the Rother, 12 m. from Chichester, with stations on the L.B. & S.C. and L. & S.W. Rlys. The church, dedicated to S. Mary Magdalene and S. Denis, is a Perpendicular building. There was a castle here, the seat of the Bohuns, in the Middle Ages. There is a 17th cent. grammar school and the Spread Eagle dates in part from the 15th cent. About 4 m. N. is the King Edward VII sanatorium for consumptives, opened in 1905. Near the town, which is surrounded by some of the most lovely scenery in Sussex, are the ruins of Cowdray Castle. Midhurst was a borough in the Middle Ages, but soon lost its rights, and was long governed by a bailiff elected in the manorial court. It was, however, separately represented in Parliament from 1300 to 1885, and had its markets and fairs. Market day, Thurs. Pop 1900.

Midi. District of France. Without any definite area, it is generally regarded as the region between the Bay of Biscay and the Mediterranean. Toulouse is its capital. It was originally the Middle Land between France and Spain.

Midi, AIGUILLE DU. Mt. in France. A peak of the Mont Blanc chain, S.E. of Chamonix, its alt. is 12,600 ft. *See Mont Blanc.*

Midi, CANAL DU. Canal of S. France. It runs from Toulouse to La Nouvelle, near Narbonne, on the Étang de Thau. Known also as the canal du Languedoc, it connects with the canalised Garonne, and thus unites the Mediterranean with the Atlantic. Built between 1666-81 by Paul Riquet, it is still an important waterway for the trade of the S.W. depts. In the 148 m. of its length there are 100 locks, and the chief towns served by it are Toulouse, Villefranche, Castelnau-dary, Carcassonne, and Narbonne.

Midi, PIC DU. Mt. of the Pyrenees, in S. France, entitled in full Pic du Midi d'Ossau. It is nearly due S. of Pau and almost on the frontier. The Grand Pic has an alt. of 9,465 ft. and the Petit Pic 9,135 ft.

Midian. Ancient region of Arabia. The territory of the Midianites, a tribe descended, according to Genesis, from Midian, a son of Abraham by the Arabian Keturah, it extended along the E. coast of the Gulf of Akabah. The Midianites, who were partly nomadic and traded by caravan with Egypt and Syria, also inhabited Sinai and the S. borders of Palestine. It was to merchants from Midian that Joseph was sold by his brethren. Moses married a daughter of Jethro, probably a priest of Baal-Peor, the national god. The Midianites were frequently in league with the Moabites against the Hebrews, but were overthrown by Gideon.

Midland Bank. Short name for the London Joint City and Midland Bank (*q.v.*). Adopted in 1923, its official designation is Midland Bank, Limited.

Midland Great Western Railway. Irish railway company. Its main line goes from Dublin to Galway and Clifden, other towns served being Mullingar, Sligo and Athlone, while it has running powers to Limerick, the line thus connecting the E. and the W. coasts. The company, which was incorporated in 1845, has its headquarters at Broadstone Terminus, Dublin. Its total mileage is 795, its capital £6,500,000, and it owns the Royal Canal, several hotels, and a dock. Its first line was from Dublin to Mullingar. Soon this was extended to Galway, Sligo, and elsewhere.

Midland Junction. Town in Swan district, Western Australia. A rly. junction 10 m. N. of Perth, it has a pop. of 3,900.

Midland Railway. British rly. company. The main line runs from London, St. Pancras, to Carlisle. It has another line going from Derby to Bath and Bristol, and a network of lines in and around the midland counties. It serves, in



M.G.W. Railway
arms

addition to the places mentioned, Manchester, Birmingham, Leicester, Leeds, Nottingham, Bradford, Sheffield and other towns in Yorkshire, Lancashire, the Midlands and the west of England, while it extends also into S. Wales and the eastern counties. It owns the London, Tilbury and Southend line, has joint lines with the L. & N.W. and L. & S.W. Rlys., and running powers over other lines. The company owns docks and other harbour works at Heysham, whence its steamers go to Belfast and elsewhere. Steamers also go between Tilbury and Gravesend. The headquarters are at Derby, where are the main shops of the company, others being at Plaistow. It has a large goods dept. at Somers Town, and owns 47 m. of canal. The total mileage, single track, is 6,625 and the paid-up capital £204,000,000.

The company was formed in 1844 by an amalgamation of three lines in the midland counties, the N. Midland, the Midland Counties and the Birmingham and Derby. In 1862 an extension to London was begun, and between then and 1900 branch lines were constructed or acquired. By the grouping scheme of 1921 it became part of the London, Midland and Scottish Rly. **Midlands.** Term used for the counties in the middle of England. The limits of the Midlands cannot be exactly defined, but they lie approximately between Yorkshire and the Thames, and between East Anglia and the counties on the Welsh border. The Midland circuit includes Lincolnshire, Nottinghamshire, Derbyshire, Leicestershire, Rutland, Northamptonshire, Warwickshire, and Worcestershire. The terms E. Midlands, N. Midlands, and S. Midlands are also used.

Midleton OR **MIDDLETON.** Market town and urban dist. of co. Cork, Ireland. It stands on the Owencurra, which enters Cork harbour just below the town, 13 m. from Cork with a station on the G.S. & W. Rly. There is a grammar school founded in 1709. Midleton was represented in the Irish parliament until 1800. There was a Cistercian abbey here. Market day, Sat. Pop. 4,000.



Midleton arms

in 1709. Midleton was represented in the Irish parliament until 1800. There was a Cistercian abbey here. Market day, Sat. Pop. 4,000.



Midlothian or Edinburghshire. Map of the Scottish county south of the Firth of Forth, rich in antiquarian and literary associations

Midleton, St. John Brodrick, 1st EARL OF (b. 1856). British politician. Born Dec. 14, 1856, the eldest son of the 8th Viscount Midleton (1830–1907), he was educated at Eton and Balliol College, Oxford, and became M.P. for West Surrey in 1880. In 1907 he succeeded to the peerage. Brodrick began his official career as a Conservative politician in 1886 by being made financial secretary to the war office. In 1895 he was made under-secretary of state for war; in 1898 under-secretary for foreign affairs, and in 1900 he succeeded Lord Lansdowne as secretary for war. In 1903 he was transferred to the post of secretary of state for India, and he left office with his colleagues in 1905. Lord Midleton was a leading figure among the Irish Unionists in the discussions on the settlement of Ireland, 1921. In 1920 he was made an earl.

1st Earl of Midleton, British politician
Russell

The Irish title of Viscount Midleton, taken from a small place in Co. Cork, was given in 1717 to Alan Brodrick (d. 1728). The 4th viscount was made a peer of the United Kingdom in 1796. The family seats are Peper Harow, Godalming, and at Midleton.

Midlothian OR **EDINBURGHSHIRE.** County of Scotland. It has a coastline of 12 m. on the Firth of Forth, its other boundaries being

counties. Its area is 370 sq. m. this including the island of Cra-

mond. The area is hilly, save on the coast; herein are the Pentland and Moorfoot Hills, with several peaks over 1,500 ft. high, as well as Arthur's Seat and other heights

around Edinburgh (q.v.). The chief rivers are the Esk, Water of Leith, Almond, and Gala. Edinburgh is the capital. In the county, too, are Leith, now part of Edinburgh, Dalkeith, Musselburgh, Mid-Calder and Penicuik, as well as such picturesque spots as Roslin, Hawthornden, and Newbattle. Oats, barley, turnips, etc., are grown; horses, cattle, sheep and pigs are reared. The county also produces coal, building stone, limestone, and oil from shales. Market gardening is carried on near Edinburgh. Outside Edinburgh the chief manufacture is paper. The county is served by the N.B. and Cal. Rlys., and the Union Canal. Apart from Edinburgh, the county sends, with Peeblesshire, two members to Parliament.

As the district around Edinburgh, Midlothian is rich in antiquarian and historic remains. Before the Norman Conquest the county was part of Northumbria. There are ruined castles at Borthwick, Crichton and Craigmillar. Rullion Green and Pinkie are battlefields. The earl of Rosebery is also earl of Midlothian. Pop. (1921) 506,378.



Midlothian arms

Midnapur. Dist. and town of India, in the Burdwan division, Bengal. The dist. lies to the S.W. of Bengal; the E. portion is alluvial plain and densely populated; the W. is jungle and sparsely peopled. The chief crop is rice. The town is an important rly. junction on the Kasai river, W. of Calcutta, to which it is joined by a navigable canal. District area, 5,186 sq. m. Pop. 2,821,200. Town pop. 32,700.

Midnight Sun. Appearance of the sun above the horizon at midnight. It may be witnessed at any point on the Arctic Circle on midsummer day, June 21, and on the Antarctic Circle on the S. midsummer day, Dec. 21. Within these circles the length of time the sun is in the sky without setting gradually increases, being 65 days in lat. 70°, and 134 days in lat. 80°, whilst the sun does not set for six months at the poles. Tourists visit the N. of Norway about midsummer to witness the phenomenon.

The phenomenon of the midnight sun is due to the inclination of the earth's axis, and to the fact that the axis points in the same direction during the whole period of the earth's yearly revolution round the sun. Similar conditions obtain within the Antarctic Circle on Dec. 21, the southern midsummer day.

Midrash. Ancient Hebrew commentary on the O.T., consisting of a vast number of comments by various authors, mixed with tales and folklore. The term is also applied to the edifying tales in the O.T. illustrating religious truths, such as the books of Ruth and Jonah. It was the storehouse from which the Rabbis drew most of their teaching. *See* Mishna.

Midshipman. In the British navy, a junior officer between the ranks of naval cadet and sub-

lieutenant. The name is derived from the fact that the quarters of the "young gentlemen"

qualifying for commissions were situated amidships on the lower deck. A naval cadet begins his training between the ages of 12 and 13, and after

Midshipman's uniform, British Navy

passing the courses in the prescribed training colleges becomes a midshipman, and goes to sea. The pay is 5s.



Midnight Sun. Photograph with eight exposures at intervals of 45 minutes, showing that the sun during this period is not setting. *See* text

a day. Besides pursuing his studies under a naval instructor, the midshipman, or "snotty," takes part in the daily routine of the ship, passing the word of command to the crew, seeing that orders are carried out, taking charge of boats, etc. Midshipmen mess in the gun-room. Their distinguishing badge is a white tab on the collar of their jacket, and for side arms they carry a dirk instead of a sword.

Midshipman Easy. Mr. Novel by Captain F. Marryat, first published in 1836. It tells the story of a midshipman whose father believes in natural equality, and who gets into many scrapes by his literal interpretation of his father's teaching before winning his way to success. The book long enjoyed considerable popularity as an adventure story characterised by a rather elementary humour.

Midsomer Norton. Urban dist. of Somerset. It is 12 m. from Bath on the G.W. and Somerset and Dorset Rlys., and the little river Somer. The chief building is the Perpendicular church of S. John the Baptist, rebuilt in the 19th century. The Somerset coalfield is in the neighbourhood. Pop. 7,300.

Midsummer Day. June 24, popularly the middle day of summer. Astronomically the period of the summer solstice (about June 21) is the beginning of summer. Midsummer Day is the feast of the Nativity of S. John the Baptist (*see* John, Eve of S.), and is an English quarter day. In some English towns and villages, stools decorated with flowers stuck in clay were placed by the house-doors or at cross-roads on this day, a custom possibly derived from the Roman festival in honour of the

deities of the cross-roads. The term "midsummer madness" may refer to the wild festivities of Midsummer Eve, or to the supposed effect of the midsummer moon. "Midsummer Man" is the plant orpine (*Sedum telephium*) used by girls on Midsummer Eve as a test of their lovers' fidelity.

Midsummer Night's Dream, A. Fairy comedy by Shakespeare. The background is provided by the Athenian celebration of the nuptials of Duke Theseus and Hippolyta, queen of the Amazons, during which some artisans perform a kind of travesty of the story of Pyramus and Thisbe. Another pair of lovers, Hermia and Lysander, enter the wood of the fairies, whither they are followed by Demetrius, in love with Hermia, and Helena, in love with Demetrius. They become involved in a quarrel between Oberon, king of the fairies, and his consort Titania. By means of the juice of the little flower called love-in-idleness, applied to their sleeping eyelids by Puck, Titania falls in love with Bottom the weaver, and Lysander with Helena. The errors are repaired and all ends happily.

Written in 1594 and first published in quarto form in 1600, this play is an example of Shakespeare's unrivalled fertility of invention. Of its 2,251 lines 878 are in blank verse and 441 in prose, while the pentametric rhymes number 731. Of modern revivals in London the following are noteworthy: at Her Majesty's, Jan. 10, 1900, when Beerbohm Tree was Bottom, Lewis Waller Lysander, Julia Neilson Oberon, Mrs. Tree Titania, Louie Freear Puck, and Dorothea Baird Helena; Adelphi, Nov. 25,



Midsummer Night's Dream. Scene at the close of the play where Oberon and Titania are reconciled and the fairies remove the ass's head from Bottom. From the picture by Sir Noel Paton, R.S.A.

Scottish National Gallery

1905, when Oscar Asche played Bottom, Walter Hampden Oberon, Beatrice Ferrar Puck, Frances Dillon Hermia, and Lily Brayton Helena; His Majesty's, April 17, 1911, when Arthur Bourchier was Bottom, Basil Gill Lysander, and Evelyn D'Alroy Oberon. See Bottom.

Midwife. Woman who assists women during childbirth. In England and Wales, under the Midwives Acts of 1902 and 1908, no woman is allowed to practise midwifery for gain unless certified as a midwife.

The central midwives board is a body set up in 1905 to control the examination and registration of midwives in England and Wales. The offices are 1, Queen Anne's Gate Buildings, London, S.W. No woman can now be certified unless she has followed a prescribed course of study and passed certain examinations, and the board can remove the name of a midwife from the roll for misconduct. See Birth; Obstetrics; Pregnancy.

M.I.E.E. Abbreviation for Member of the Institution of Electrical Engineers.

Mieres. Town of Spain, in the prov. of Oviedo. It stands on the river Nalon, 12 m. by rly. S. of Oviedo. The centre of the Asturian mining industry, it has iron-foundries, steel and zinc works, blast furnaces, and chemical works. An extensive trade is carried on in timber, cider, fruit, and cattle. Sulphur, copper, and cinnabar are mined. Pop. 28,000.

Mierevelt, MICHEL JANSZ VAN (1567-1651). Dutch painter. Born at Delft, May 1, 1567, he studied there under Willemsz and Augustyns, and at Utrecht under Antonio Blokland, 1579-83, and became court painter to the prince of Orange. He was famed for his

numerous portraits, executed with a skill and attention to detail which compensate for a certain coldness in treatment.

Among his portraits are those of Grotius, Gustavus Adolphus of Sweden, Huygens, Coligny, the duke of Buckingham, and William the Silent, and



M. van Mierevelt,
Dutch painter
After Van Dyck

he left also some still life and genre paintings. Examples are to be seen in the Ryksmuseum, Amsterdam, the Louvre, The Hague, Dresden, Berlin, and one in the National Gallery, London. He died at Delft, July 27, 1651.

Mieris, FRANS VAN, THE ELDER (1635-1681). Dutch painter. Born at Leiden, April 16, 1635, he

studied at first under a glass painter, Abraham Toorenvliet, then under van den Tempel, and later under Gerard Douw, and became a member of

the Leiden Guild, 1658. He painted scenes of better class Dutch life. He died at Leiden, March 12, 1681. Most continental galleries possess examples of his work. His sons Jan and Willem and his grandson Frans were also painters.

Miers, SIR HENRY ALEXANDER (b. 1858). British scientist. Born at Rio de Janeiro, May 25, 1858, and educated at Eton and Trinity College, Oxford, he was assistant in the British Museum, 1882-95.

Instructor in crystallography at the central technical college, S. Kensington, 1886-95, he edited the Mineralogical Magazine, 1891-1900, was Waynflete professor of

mineralogy, Oxford, 1895-1908, and principal of the university of London, 1908-15. In 1915 he became vice-chancellor of the university of Manchester and professor of crystallography. In addition to publishing numerous scientific papers he was author of *The Soil in Relation to Health* (with Dr. R. Crosskey), 1893, and *Mineralogy*, 1902. He was knighted in 1912.

Migne, JACQUES PAUL (1800-75). French theologian and publisher. Born at St. Flour, Cantal, Oct. 25, 1800, he was educated at Orleans. In 1824 he was ordained priest, and in 1833, owing to a disagreement with his bishop, went to Paris, where he founded a journal *L'Univers Religieux*, and three years later, after selling it, founded a publishing establishment at Petit Montrouge. He issued a great number of theological texts and other publications, possessing for the most part little critical value. His publications include *Encyclopédie théologique*, 171 vols., 1844-66; *Collection des Auteurs Sacrés*, 100 vols., 1846-48; and the enormous *Patrologiae Cursus Completus*, Greek series, 161 vols., 1857-66, Latin series, 221 vols., 1844-55. In 1868 the printing works were destroyed by fire. Migne died in Paris, Oct. 25, 1875.

Mignet, FRANÇOIS AUGUSTE MARIE (1796-1884). French historian. Born at Aix, Provence, May 8, 1796, the son of a locksmith, he studied at Avignon and Aix, and became a lawyer. He made a name, however, by some historical work, and settling in Paris was for a time a journalist on the side of Liberalism. From 1830-48 he was keeper of the archives of the foreign office. His *History of the French Revolution*, 1824, is still a standard, while his studies on the history of the 16th and 17th centuries—Antonio Perez and Philip II, 1845; Charles V and his Abdication, 1854; and



Sir Henry A. Miers,
British scientist
Russell



Frans van Mieris,
Dutch painter



François Mignet,
French historian

Mary Stuart, 1851—are marked by the same accuracy and clearness. He also wrote upon the history and institutions of France in the Middle Ages. He died March 24, 1884, in Paris, having been for some years secretary of the academy of moral and political sciences.

Mignonette (*Reseda odorata*). Perennial herb of the natural order Resedaceae. Its native country is



Mignonette,
foliage and flower

unknown; but, introduced to British gardens from Egypt in 1752, it has become one of the most popular of plants owing to its fragrant flowers. The stem branches from its base, and the plant becomes a rather diffuse clump, bearing alternate lance-shaped leaves which may be simple or three-lobed. The flowers are borne in dense pyramidal racemes at the ends of the shoots. The calyx is six-parted, and the cream-coloured petals are divided into slender segments. The most conspicuous feature is supplied by the numerous red stamens. Usually grown as an annual, it succeeds in almost any garden soil; but the best results are obtained on a rich, heavy soil, to which old mortar has been added. Seed should be sown very thinly.

Migraine, MEGRIM, OR HEMICRANIA (Gr. *hemi*, half; *kranion*, skull). Severe headache occurring in paroxysms and often affecting only one side of the head. Heredity plays an important part in causing the disorder, and other factors are dyspepsia, anxiety, and reflex strain, such as may be caused by an error of refraction. Disturbances of vision, as flashes of light and zig-zag lines, often precede an attack. Numbness and tingling of the tongue, face, and hands may occur, and sometimes cramps in the muscles of the affected side. Severe headache follows, often beginning in the forehead or eyeball and then spreading over half, and sometimes the whole, head. Nausea and vomiting are common. The symptoms may last from a day to three days. Treatment consists in avoiding excitement or overwork, and in moderation in diet. See Headache.

MIGRATION OF BIRDS AND ANIMALS

J. Arthur Thomson, Regius Prof. of Natural History, Aberdeen

This article deals with the seasonal and other movements of animals and especially birds, the corresponding movement among humans being dealt with under emigration. See Bird; Animal, and the articles on the various birds and animals; also Heredity

Migration may be defined as a periodic mass-movement of animals, especially birds, from one seasonal habitat to another, and back again, partly in relation to changes in meteorological conditions and food supply, partly in relation to reproduction and the requirements of the young. The characteristics of true migration may be made clear by contrasting it with superficially similar mass-movements, such as those of the small Scandinavian rodents called lemmings (*g.v.*) and of locusts.

In both cases this mass-movement is an attempt to cope with the difficulty of a population which has outrun the immediately available means of subsistence, but in neither case is it strictly migration, for it is not regular in its occurrence, is not in its motive in any way connected with reproduction, and there is no return journey. In the same way, the mass-movements of gregarious fishes—like mackerel and herring—in the sea, in so far as they merely imply following the movement of the crustaceans and the like on which the fishes feed, or working along tracks of congenial temperature, salinity, oxygenation, and the like, are not true migrations. Whenever there is evidence of a regular seeking-out of particular spawning-grounds, whence the fry in due time return to the open sea, the note of true migration is sounded.

Mass Movements

Migration in the strict sense is best illustrated by birds, many of which exhibit a mass-movement from a breeding and nesting place (the summer-quarters) to a feeding and resting place (the winter-quarters), and then back again. In the N. hemisphere migratory movements are exhibited by the majority of birds, though the range differs greatly. The Arctic tern may reach the Antarctic Circle; the curlew may simply shift in autumn from moor to shore. Relatively little is known in regard to migration in the S. hemisphere, but in a N. temperate country the birds may be grouped as (a) summer visitors, *e.g.* swallow and swift, cuckoo and nightingale, which arrive from the S. in early spring and return in late summer after breeding; (b) winter visitors, such as snow-bunting, redwing, fieldfare, and great northern diver, which return in early spring

to their breeding haunts farther N.; (c) birds of passage in the strict sense, which spend a few days, it may be, in the country in question on their way farther N. or farther S.; (d) partial migrants, such as lapwing and goldfinch, some of which leave the country in late summer, while others stay on and have their ranks increased by contingents from farther N.; and (e) residents which do not migrate, such as sparrows and the red grouse in Britain. It is plain that a winter visitor in one country will be a summer visitor farther N., and that a bird of passage in one country will be a summer visitor or winter visitor somewhere else. The general fact is important, that birds breed in the colder area of their migratory range.

Regularity of Movement

The migratory movements are often marked by great regularity, which points to their being old-established. Thus there is often great uniformity in the times of arrival and departure; it has been proved in some cases, *e.g.* stork and swallow, that a marked bird may return in spring to the very building in which it was born the year before; as a rule the mature males arrive first from the S., then the mature females, and then the younger birds; in most cases (the cuckoo is a notorious exception) the young birds are the first to leave for the S. at the end of summer. There is often a noticeable difference between the spring flight northward, which tends to have few or no interruptions and to take the shortest route, and the autumn flight southward, which may be more dallying and somewhat circuitous.

Routes Followed

Data are gradually accumulating in regard to the routes followed by birds in their migratory flight. Some, like the swallows, fly more or less directly S. in autumn, *e.g.* from Britain to the Gold Coast; and in the opposite direction in spring. Many birds of N. Europe begin their autumnal flight in a W. direction, and then curve S. Others fly S. and then curve to the E.

By marking birds with numbered rings some secure data as to migratory routes have been obtained; thus it is known that many North-European storks pass S. through Africa to Natal and other regions in the far S. It is also known that great crowds of migratory birds fly

along coast-lines, or follow river valleys, or pass along a chain of islands, as if utilising available landmarks. Exaggerated estimates of the velocity of migrants have gained currency, but it is certain that many attain a speed of 100 m. per hour. Some birds, such as larks, starlings, thrushes, and hooded crows, fly rather low, while others migrate at a height of 3,000 to 5,000 ft. In 1921 it was announced that pilots of commercial aeroplanes were to observe bird flight on a precise and organized scale. New light was expected to be thrown on the altitudes at which birds fly when migrating. The *lämmergeier* (g.v.) pursued by an aeroplane was credited with attaining a speed of 110 miles per hour.

Instinct of Migration

The impulse to migrate at particular times seems to be inborn or instinctive, and of ancient origin. It is exhibited by young birds which have had no experience of winter, and by caged birds which are physically comfortable. Moreover, the fact that it occurs at many different levels of intelligence among other backboneed animals, such as salmon, turtle, and seal, suggests that it is instinctive in nature. Its history is probably involved with that of climates, for long, cold, dark, and sterile winters would prompt southward movements in autumn, would favour the survival of those restless, experimenting birds which began migrating, and would make for the elimination of dull, sluggish, or foolhardy birds. Another factor would be the over-crowding at the end of the breeding season. The return journey in spring to the colder part of the migratory range may be in part understood, when we remember the risks and discomforts of nesting in hot and dry places, and the abundance of insect life and of fruits and seeds that is characteristic of summer in many areas.

There is considerable mortality involved in the yearly migrations of birds, especially when the weather conditions are unpropitious, but the marvel is that such a large measure of success attends the adventure. Many attempts have been made to explain how migratory birds find their way to their goal, but no secure answer can as yet be given. It is probable that diverse facts have to be taken into account in different cases. Thus some birds seem to utilise landmarks, such as coast-lines, chains of islands, river valleys, mountain passes, which may be very important for them, though not available for others, e.g. for those that make long journeys

over the trackless sea, or in the darkness, or at a great height.

It may also be that birds which followed well for several years will lead well in due season, a social tradition being kept up. But in the case of most British birds the novices go off first, and apparently unattended by old experienced birds, though it is difficult to be sure of a fact of this sort. In the unique case of the cuckoo the youngsters are left to make the journey alone, as far as their real parents are concerned, and some of their foster-parents are residents or partial migrants.

The theory of hereditarily accumulated experience has against it two serious difficulties, that there is no secure evidence of the hereditary entailment of the result of individually acquired experience, and that it is impossible to indicate the nature (technically, the psychological and physiological content) of the experience of travelling over sea, in the darkness, and at great heights.

Sense of Direction

The postulate of a special "sense of direction" seems merely verbal. Experiments are in progress which may result in a discovery of the particular stimuli, such as magnetic currents, in responding to which birds are on the whole guided aright in making for their goal. The difficulty involved in the fact that the goal has been previously unexperienced by the individual is not peculiar to the problem of how bird-migrants find their way. It has been proved that nesting terns from Bird Key at the mouth of the Gulf of Florida may be transported in hooded cages over unknown waters to the N. and to the W., for 800 miles and more, and yet find their way back in a percentage of cases. The probability is that birds utilise stimuli, at present undetected, which have hereditarily come to have directive significance, and that, in addition to this still unanalysed factor, much of the success in migration may depend on individual acuteness and on socialised cooperation.

Apart from birds, true migration is illustrated by some fishes such as salmon, sturgeon, and eel; by marine turtles among reptiles; by seals, sea-lions, some whales, some bats, and some other mammals.

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Miguel, MARIA EVARIST (1802-66). Portuguese prince. Born Oct. 26, 1802, the third son of John VI



Dom Miguel,
Portuguese prince

of Portugal, he accompanied his parents to Brazil, but returned to Portugal in 1821. On the death of John VI in 1826, the heir to the throne, Dom Pedro, already emperor of Brazil, abdi-

cated his rights to the Portuguese throne in favour of his younger daughter, Donna Maria, on condition that she married his younger brother, Dom Miguel, but this she refused to do. Dom Miguel was proclaimed king June 30, 1828, but was compelled to leave Portugal by the convention of Evora Monte, May 26, 1834. Deprived of his title of Infant of Portugal, and declared to have forfeited his rights of Portuguese citizenship for himself and his descendants, he found refuge in Rome. He married in 1851 Princess Adelaide of Löwenstein-Wertheim-Rosenberg, and he died Nov. 14, 1866.

Mijatovich, CHEDOMILLE (b. 1842). Serbian statesman. Born at Belgrade, he became professor of political economy at the High College, Belgrade, 1865. In 1874 he joined the Progressive party, and became a senator in 1875. Minister of finance and commerce, 1873-75, and of foreign affairs and finance, 1880, in 1886 he represented his country in the peace negotiations with Bulgaria. In 1894 he was minister to Rumania, and from 1895-1900 minister plenipotentiary to Great Britain. In 1900 he was transferred to Constantinople, but was re-appointed to London in 1902, resigning in 1903. He published Serbia and the Serbians, 1908, and A Royal Tragedy, 1906, on King Alexander's murder. He married an Englishwoman, Elodie Lawton (d. 1908), who wrote on Serbian history and folklore. *Pron.* Mee-yahto-vitch.

Mikado. Title used by Europeans, rarely by Japanese, for the emperor of Japan. The word means "exalted gate," cf. "Sublime Porte." According to Japanese official chronology Jimmu, the first emperor, ascended the throne 660 B.C. and all subsequent emperors

trace descent from him in unbroken line. The mikados claim divine origin through the sun goddess, of whom Jimmu was the direct descendant. Seven of the mikados were women. During the ascendancy of the Shoguns, the mikado had no part in the government, and was regarded as the spiritual emperor. See Japan.

Mikado, THE. Comic opera, by W. S. Gilbert, with music by Arthur Sullivan. It was produced at the Savoy Theatre, London, March 14, 1885, where it had a run of 672 performances, and is still in the repertoire of the D'Oyly Carte Company. The original cast included Rutland Barrington as Poo Bah, George Grossmith as Koko, Durward Lely as Nanki Poo, Richard Temple as the Mikado, Leonora Braham as Yum Yum, Jessie Bond as Pitti Sing, Sybil Grey as Peep Bo, and Rosina Brandram as Katisha.

Mikania. Large genus of twining perennials of the order Compositae, natives chiefly of tropical America. They have opposite heart-shaped or oval leaves, and



mikania. Foliage and flower spray of the climbing hemp-weed

flower-heads consisting invariably of four florets only. One species, known as climbing hemp-weed (*M. scandens*), occurs in the U.S.A. and Canada. The S. American *M. guaco*, with blue flowers, is believed to be the species to which chiefly the name of Guaco is applied by the natives, who consider it an antidote for poisoning by snake-bite. The name commemorates Joseph G. Mikán (1743-1814), professor of botany at Prague.

Mikhailov. Town of Central Russia. It is in the government, and 30 m. S.W., of Ryazan, on the Pronia. The chief industries are forestry, candle-making, and tanning; considerable trade is done in cereals, timber, cattle, and horses. Mikhailov was founded in 1555, when Ivan the Terrible constructed a line of defences as a protection against Tartar invaders. Pop. 10,000.



Milan. Plan of the central districts of the commercial and industrial capital of Italy

Mikir. Primitive tribe of Tibeto-Burman stock. They are mostly in the Sibsagar, Nowgong and Khasi and Jaintia hills districts, Assam. Numbering (1911) 106,259, all are animist, except a few hundred Hinduised and some Christian converts. Unwarlike peasantry, occupying pile-houses, they exhibit both Naga and Kuki Chin relationships.

Mikulov. Town of Czechoslovakia. In S. Moravia, it was formerly known as Nikolsburg. It stands at the foot of the Polau Mts., 52 m. from Brno. The chief building is a castle, long the residence of the family of Dietrichstein. It has also churches, synagogues, and a monument to Joseph II. Near is the holyhill, on which are a church and many chapels. The industries are vine-growing and cloth-making. In July, 1866, the preliminary treaty between the Prussians and the Austrians was signed here. Pop. 8,000.

Milan. Province of N. Italy, in Lombardy. It is bounded N. by the prov. of Como, S. by Pavia and Piacenza, W. by Novara, and E. by Bergamo and Cremona. A level plain, bordered by the Po, Ticino, and Adda, it is irrigated by canals. The climate is extreme, hot in summer and intensely cold in winter. Fertile and well cultivated, it produces rice, flax, corn, oil, wine, fruit, cattle, butter, and cheese. Mulberry trees are grown for rearing silk-worms. The prov. is well served by rlys. Area, 1221 sq. m. Pop. 1,833,900.

Milan. City of Italy, capital of the prov. of Milan. The ancient Mediolanum, the Italians call it

Milano. It stands on the navigable river Olona, 93 m. by rly. E.N.E. of Turin. The second largest city of Italy, its alt. is 400 ft. The Olona flows between the Adda and the



Milan arms

Ticino, the three rivers feeding several canals, of which the most important is the Naviglio Grande, or Great Canal, encircling much of the interior of the city and dividing it into two unequal parts. On the outskirts there are other canals, utilised for traffic and irrigation purposes.

Milan is the chief financial centre and the richest commercial and industrial town of Italy. It is an important rly. junction, the seat of an archbishop, and the centre of an agricultural and industrial district. Architecturally, Milan's principal glory is the magnificent cathedral dedicated to the Virgin. Faced with white marble, its many decorations make it one of the most sumptuous churches in the world. The roof has over 4,000 marble statues and many pinnacles. It was founded by Galeazzo Visconti in 1386, was consecrated in 1577, and was finished by order of Napoleon 1805-15. It covers an area of 14,000 sq. yds., and is capable of



Milan. 1. Entrance of the Galleria Vittorio Emanuele, from the Piazza del Duomo. 2. View of the city looking north, from the roof of the cathedral. 3. Corso Vittorio Emanuele, the chief thoroughfare. 4. Church of S. Ambrogio

accommodating 40,000 persons. Sant' Ambrogio, founded by S. Ambrose in the 4th century, contains his tomb. It is a Roman basilica, practically rebuilt in the 12th, modernised and restored. Its lofty brick campanile, c. 800, is one of the earliest in Italy. Here the Lombard kings and Roman emperors were crowned with the famous iron crown preserved at Monza (*q.v.*). The monastery adjoining the church of S. Maria delle Grazie (1463) contains Leonardo da Vinci's painting, *The Last Supper*. There are many other old churches, museums, picture galleries, hospitals, academy, library, observatory, monuments, scientific, musical, artistic, educational, and philanthropic institutions. The celebrated Teatro della Scala (1778) seats 3,600 spectators.

Prominent among the many fine palaces is the Palazzo della Ragione in the centre of the medieval city, built of brick, 1223-38. Near it is the beautiful Loggia degli Osii, 1316, in black and white marble. Milan is rich in works of art, both in sculpture and in painting. The Brera palace, 1651, houses one of the finest collections of paintings in Italy; its library contains 300,000 volumes and about 60,000 coins. The castle of the Sforzas contains a valuable archaeological collection.

The massive walls enclosing the inner city have been destroyed, and their site is occupied by promenades. The outer circle of walls, built by the Spaniards in the 16th century, is almost intact. On the N.W. side the line is broken by the handsome New Park; to the N.E., within the walls are the Public Gardens, reputed the most beautiful in Italy, with their old trees, ponds, statues, and royal villa. Between them and the Piazza del Duomo, adorned with an equestrian statue of Victor Emanuel, runs the Corso named after that king. Out of the Cathedral Square opens the famous Galleria Vittorio Emanuele, a great glass-roofed arcade, with a cupola 160 ft. high.

The centre of the Italian silk trade, Milan manufactures machinery, motor-cars, instruments, locomotives, wagons, carriages, metal bridges and roofing, dynamos, cycles, electric cables and accessories, textiles, furniture, etc.

Milan was the seat of government of the Western emperors from Maximian, A.D. 286, until its sack by the Huns in 452. Taken by the Goths in 493, it became the capital of Theodoric, but was nearly destroyed by the Goths in consequence of a revolt in 539. It was rebuilt and in the 12th century was one of the greatest of the city republics which fought against

Frederick Barbarossa. It became the capital of a duchy ruled by the families of Visconti and Sforza. From 1805 to 1814 it was the capital of the kingdom of Italy which was created by Napoleon. After the battle of Solferino the Austrian emperor was obliged, by the treaty of Villafranca, July 11, 1859, to resign all claim to the province, and the city of Milan became merged in the kingdom of Italy. Pop. 663,000. *See Italy*; Visconti; consult also *History of Milan under the Sforza*, C. M. Ady, 1907; *The Story of Milan*, E. Noyes, 1908.

Milan. Duchy of Italy, now part of the kingdom. The title of duke of Milan was first granted by the emperor Wenceslaus to Gian Galeazzo Visconti (*q.v.*) in 1385. Under him the territory extended as far as Pisa, Bologna, Perugia, and Spoleto. On the death of his son Filippo Maria, 1447, a republic was proclaimed, but in 1450 Francesco Sforza seized the power, and for eighty years with intervals the Sforzas held the duchy.

The most famous of the family was Lodovico il Moro, who invited Charles VIII of France to enter Italy, ostensibly for the purpose of waging war against Naples. Victim of his own guile, Lodovico was deposed by the French in 1500, and for twelve years the foreigners held the city. Lodovico's son,



General view from the campanile of S. Carlos, to the north-east of the cathedral, giving an impression of the number and beauty of the pinnacles and the delicate tracery of the whole structure. Above, the magnificent west front, seen from the Piazza del Duomo

MILAN CATHEDRAL: A WONDERFUL EXAMPLE OF GOTHIC ARCHITECTURE

Massimiliano, was restored in 1512, only to hand the duchy back to the French three years later.

The victory of the emperor Charles V at Bicocca ousted the French from Milan and Lodovico's son, Francesco, was reinstated. He was the last of the Sforzas, and on his death, in 1535, the duchy was given by Charles V to Philip, afterwards Philip II of Spain. The duchy of Milan then became an appanage of the Spanish crown. In 1714, however, at the peace, it was handed over to Austria, and Austrian it remained until the invasion of Napoleon in 1796. The Cisalpine Republic of 1797, followed by the kingdom of Italy, 1805-14, centred round Milan, but after Napoleon's fall it reverted to Austria. In 1859 it passed to Italy.

Milan Obrenovich (1854-1901). King of Serbia. Born at Jassy. Aug. 22, 1854, grand-nephew of



Milan Obrenovich,
King of Serbia

Milosh Obrenovich (*q.v.*), he was adopted on the death of his parents by his cousin, Michael Obrenovich, who became prince of Serbia in 1860. Upon the assassination of Michael eight years later, Milan succeeded to the throne under a regency, being declared of age in 1872. In 1882 he made his principality an independent kingdom. His adherence to Austria lost him the affection of his subjects, and in 1889 he abdicated in favour of his son Alexander and settled in Paris, where he remained until 1894. In that year he returned to Serbia, where, although making no attempt to regain the throne, his position of adviser to Alexander was almost equivalent to that of dictator. He was given command of the army in 1898 and put the service on a sound footing. Milan's quarrel with Alexander over the latter's marriage, 1900, led to his resignation. He was banished from Serbia and retired to Vienna, where he died Feb. 11, 1901. *See* Serbia.

Milazzo. Seaport of Sicily, in the prov. of Messina. The ancient Mylae, it stands on the N.E. coast, 22 m. by rly. W. of Messina. It has a commodious harbour, and its chief exports are tunny, sulphur, oil, wine, fruit, and cattle. The castle, built by Charles V and restored in the 17th century, is now a prison. In the vicinity are sulphur springs. Mylae was an outpost of Zancle in the 7th cent. B.C., and in its bay the Romans won their first naval

victory over the Carthaginians in 260 B.C. Here Garibaldi defeated the Neapolitans on July 20, 1860. Pop. 16,000. *See* Messina.

Mildenhall. Market town of Suffolk. It stands on the Lark, 12 m. from Bury St. Edmunds and 76 m. from London, with a station on the G.E. Rly. The chief building is S. Andrew's Church, mainly Perpendicular, a noble erection famous especially for its tower, chancel, and roof. There is a market cross of the 15th, and a manor house of the 17th century. It is an agricultural centre, milling being an industry. Roman remains have been found near by. The manor belonged to the monks of Bury Market day, Fri. Pop. 3,650.

Mildew. Popular term of such loose application that it has little descriptive value, including as it does such diverse fungi as moulds, rusts, cluster-cups, and powdery mildews. Properly used, it should be restricted to the last named, the external blights of the order Erysiphaceae, whose mycelial threads form a cobweb-like patch on the surface of leaves and shoots, whilst their suckers attack the superficial cells. Well-known examples that may be cited are the vine blight (*Erysiphe spiralis*) at a stage formerly known as *Oidium tuckeri*, pea mildew (*E. polygoni*), hop mildew (*Podosphaera castagnei*), and rose mildew (*P. pannosa*). The last named, from its frequent occurrence on garden roses, will be most familiar.

The mealy appearance of the white patches on the leaves and stems of the rose is due to the presence of multitudes of microscopic summer spores (*conidia*), which are dispersed by the wind, insects, etc., and infect other roses. In the autumn the same patches will be found to be studded by larger black dots (*sporocarpia*), which remain until the spring, when the integument breaks up and releases the contained spores, which on dispersal by the wind infect the new shoots and unfolding leaves. The abstraction of nutriment from the leaf-cells produces starvation and withering of the plant. Flowers of sulphur dusted on the patches, or the same boiled in water with an equal weight of quicklime and the clear liquor sprayed, stops the attack. *See* Fungus; Phycomyceetes; Rust; Spore.

Mild Steel. Name given to a variety of steel usually not containing more than about 0.5 p.c. of carbon. *See* Steel.

Mildura. Centre of the irrigation scheme on the Murray river. In the N.W. of Victoria, Australia,

351 m. from Melbourne, the state spent £3,000,000 on the scheme, dealing with 150,000 acres. Mildura has fruit packing and preserving, and olive oil factories. Pop. 7,600.

Mill. Measure of distance. As first used by the Romans it was approximately 1,614 yards. The British statute mile is 1,760 yards, and was legalised in 1593. The length varies considerably in different countries. The old Scottish mile was 1,984 yards; the Irish 2,240 yards; the old London mile 1,666 yards, etc. The old English mile consisted of ten furlongs instead of eight, and a mile, equaling a little over $1\frac{1}{2}$ present-day miles, was extensively used in the N. of England and in Wales till the 16th century. The geographical mile, or nautical mile, is 2,026 $\frac{2}{3}$ yards. *See* Weights and Measures.

Mill End. District of E. London. Once a hamlet of Stepney parish, it now forms the central and N.E. parts of Stepney bor. Through it runs the Mill End Road, probably the broadest thoroughfare in London, connecting Whitechapel Road and Bow Road. Part of the district between Commercial Road East and Mile End Road is known as Mile End Old Town. Notable buildings include Trinity Hospital, 1695, almshouses for master mariners and mates and their wives or widows; the Vintners' almshouses, 1676, rebuilt 1802; the People's Palace, opened 1887, and East London College, a school of the University of London; the Paragon Theatre, the Great Assembly Hall, associated with the work of F. N. Charrington; the Old Town Workhouse, and S. Benet's Church. In the Jews' Burial Ground, closed 1858, are the graves of Lord Beaconsfield's grandfather, Benjamin Disraeli, and Baron Nathan Rothschild. Captain Cook, the navigator, lived in the Mile End Road. At Mile End Green, now Stepney Green, Wat Tyler assembled his followers for the attack on London. Mile End is said to have been named from the fact that it begins a mile from the old city wall at Aldgate. *See* Stepney.

Miles, EUSTACE HAMILTON (b. 1868). British athlete and food reformer. Born at Hampstead, Sept. 22, 1868,

he was educated at Marlborough and King's College, Cambridge. In America in 1900 he won the amateur championships at tennis.



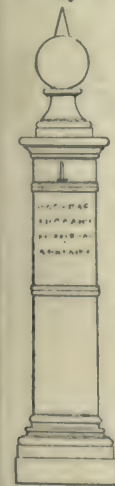
Eustace Miles,
British athlete

racquets, and squash-tennis. He won the English Amateur Racquets Championship in 1902 (singles and doubles), 1904-6 (doubles), was amateur tennis champion 1898-1903 1905-6, and 1909-10, and won the gold prize 1897-99, 1901-6, and 1908-12. He was amateur champion of the world at racquets, 1902, and at tennis 1898-1903 and 1905. Eustace Miles wrote many works on sport, history, food reform, etc. He gave practical illustration of his faith in his dietetic theories by starting a restaurant in London.

Miles, NELSON APPLETON (1839-1925). American soldier. Born at Westminster, Mass., Aug. 8, 1839, he was for some years in business at Boston. During the Civil War he fought on the Federal side as a volunteer, and rose to the rank of brigadier-general, especially distinguishing himself at the battle of Chancellorsville. He was in command of the operations against Porto Rico in the war with Spain, became a lieutenant-general in 1900, and died May 15, 1925.

Milesian. Legendary name of an early Irish race. It is a latinised form of Miled, perhaps an equivalent of a Celtic *gulum*, "warrior." Tall, fair-haired, blue-eyed Goidelic Celts, they mingled with and subdued the earlier population. One tribe, the Scots, whose name was given in Latin annals to the whole people, migrated to northern Albion (Scotland). See Celt; Firlbolg.

Miles Platting. Suburb of Manchester, England. It comprises the ecclesiastical districts of St. John and St. Luke, and its suburban rly. station on the L. & Y. Rly. is $1\frac{1}{4}$ m. N.E. of the terminus at Victoria Station, Manchester. Pop. 16,000. See Manchester.



Roman milestone

measurement of all the roads of the empire.

Milestone (Lat. *lapis miliaris*). Stone set up to mark distances along roads. Inscribed pillars erected at equal distance of 1,000 *passus* — 5,000 Roman ft., equivalent to 4,850 English ft. or 1,617 yds.—and marking the distance from the gate at which the road emerged from Rome, were a regular feature of the military roads constructed by the Romans from the middle of the 2nd century B.C., and perhaps earlier. Julius Caesar began the

Fragments of the first milestone on the Appian Way have been discovered about 120 yds. outside



Milestone, Clapham Common, London

eraries. In the forum at Rome Augustus erected a bronze-gilt pillar, known as the *aureum miliarium*, golden milestone, mounted on a square pedestal, upon which were inscribed the names of the chief towns on the roads leading out of the 37 gates of the city. Similar central stones were set up in provincial capitals, e.g. London Stone in what is now Cannon Street.

Milestones. Comedy by Arnold Bennett and Edward Knoblauch. Produced at the Royalty Theatre, London, March 5, 1912, it had a run of 607 performances. In effect a family history running over 50 years, it contrasts the fashions of thought, speech, dress, and life of 1912 with those of 1860 and of 1885.

Miletus. Ancient city of Asia Minor. Standing on the Gulf of Latmos, near the mouth of the Maeander, it was the chief town of the Ionian colonies of Greece. A great commercial city, it was famous for its woollen goods, traded with the whole Mediterranean coast, and established many colonies on the Propontis and Euxine, as well as Naucratis, in Egypt. Taken by Croesus, and in 557 B.C. by the Persians, it headed the great Ionian revolt against Persia, but was destroyed on its suppression in 494 B.C. Taken by Alexander, it passed to the kingdom of Pergamum, and to Rome. The birthplace of Thales and other Greek writers, it is poorly represented by the modern Palatia.

Milford OR **MILFORD HAVEN.** Seaport and urban dist. of Pembrokeshire. It stands on the N. side of Milford Haven, 9 m. from Haverfordwest and has a station on the G.W. Rly. Milford owes its origin to R. F. Greville, who, in 1790, planned a port here as a

centre for the trade with Ireland. Soon afterwards the government established a dockyard here, but in 1814 this was transferred to a spot on the S. side of the haven, which was named Pembroke Dock. It has good dock accommodation, and from here vessels go to Ireland and elsewhere. Pop. 6,400.

Milford. Town of Massachusetts, U.S.A., in Worcester co. It is on the Charles river, 17 m. S.E. of Worcester, and is served by the New York, New Haven and Hartford and other rlys. A large shipping trade is carried on, and boots and shoes and foundry and machine-shop products are manufactured. Granite is extensively quarried in the locality. Settled in 1669, Milford was incorporated in 1780. Pop. 13,500.

Milford Haven. Opening of the Atlantic Ocean. On the coast of Pembrokeshire, it is regarded as the finest natural harbour in England and Wales. It extends inland for 17 m., being from one to two miles broad. Milford is on the N. side, and on an inlet on the S. is the royal dockyard of Pembroke Dock. The estuary of the E. and W. Cleddy rivers, its Welsh name is Aberdaugleddau. Its position and safety made it in the Middle Ages the chief harbour for intercourse with Ireland. It was fortified in the time of Elizabeth and in more modern fashion in the 19th century. See map overleaf.

Milford Haven, MARQUESS OF. Title granted to Louis Alexander, prince of Battenberg, who adopted the surname of Mountbatten, in 1917. Son of Prince Alexander of Hesse, he was born at Gatz, Austria, May 24, 1854. Naturalised as a British subject, he entered the navy in 1868 and rose to be rear-admiral in 1904. He served in the Egyptian War, 1882, was director of naval intelligence, 1902-5, and after several lesser commands was appointed commander-in-chief of the Atlantic Fleet, 1908-10, second sea lord, 1911-12, and first lord 1912-14. He died Sept. 11, 1921, and was succeeded by his eldest son, the earl of Medina (q.v.).

Milford Sound. Fiord in the S.W. of South Island, New Zealand. It is 217 m. from Bluff, Southland, by sea, and is reached overland from Lake Te Anau. Mitre Peak and Tutoko rise sheer from the water, the former to a height of



1st Marquess of Milford Haven
Russell



Milford seal



Milford Haven, Pembrokeshire. Map of the natural harbour in South Wales, showing the towns of Pembrokeshire and Milford Haven. See previous page

5,560 ft., the latter to 9,042 ft. The sound forms part of a national reserve, comprising also the neighbouring fjords and covering more than 2,000,000 acres of magnificent scenery. The Sutherland waterfall, 1,904 ft. in height, and Lake Ada are its chief attractions.

Militarism. Term generally used in a disparaging sense for the mental attitude of the professional soldier, or for a national attitude of mind which logically results in war. During the years preceding the Great War Prussian militarism was a prime factor in causing other European nations to arm against possible aggression, as, more than a century before, France had been regarded by her neighbours as a danger to the peace of the world. See Militarism, G. Ferrero, 1902.

Military Academy. ROYAL. Institution at Woolwich for training officers for the British army, a similar institution being the Royal Military College, Sandhurst. Entrance is by competitive examination; successful candidates for commissions in the artillery and engineers go to Woolwich, while infantry and cavalry officers are trained at Sandhurst. A corresponding air force college is at Cranwell. See Sandhurst; Woolwich.

Military Administration. SCHOOL OF. Organization of the British Army. Established in Sept., 1920, at Chiseldon, Wiltshire, for the purpose of teaching the principles of administration, it provides courses for officers and men, both of the regular and the auxiliary forces, in elementary economics, transportation, food values, and catering, while a branch deals with the best uses of the food ration.

Military Band. Combination of wind and percussion instruments used for military purposes. While any group of these instruments is often popularly called a military band, the term should be reserved for the full military orchestra of flutes, double and single reed instruments, and trumpets, horns and bugle types of all sizes, most of which are transposing instruments, together with a great variety of percussion instruments.

In Great Britain there is no fixed standard, but a large military band may contain 2 piccolos and 2 flutes in E flat or D flat, 4 hautboys, 2 E flat clarinets, 8 1st, 6 2nd and 4 3rd B flat clarinets, 1 alto clarinet in E flat, 4 saxophones in E flat and B flat, 4 bassoons, 1 double bassoon, 6 1st and 4 2nd cornets in B flat, 2 trumpets in E flat or B flat, 4 horns in E flat or F, 2 flügelhorns in B flat, 2 baritones in B flat, 2 euphoniums in B flat or C, 2 or 3 tenor trombones in B flat, 1 bass trombone, 5 bombardons in E flat and B flat, 2 string basses, kettle drums, side drums, bass drum, cymbals, triangles, bells, glockenspiel, &c., &c.

Military bands in other countries are differently constituted and are progressive both in size and in variety. For comparative lists of the bands of France, England, Germany, Austria, Russia, Italy, and Spain, and the evolution of the military band from the earliest times, see *Military Music: a History of Wind Instrumental Bands*, J. A. Kappey, 1894; *Memoirs of the Royal Artillery Band*, H. G. Farmer, 1904; *The Rise and Development of Military Music*, A. G. Farmer, 1912.

Military Cross. British military decoration. Instituted in 1915 to reward conspicuous service of captains, commissioned officers of a lower grade, warrant officers, and Indian and colonial military forces, it was awarded as from Aug. 1, 1918 for "services in action" only. In 1920 it was announced

Military Cross and ribbon

that a warrant officer, Class I or II of any of the British military forces, who had been awarded this decoration, would, in future, be paid a gratuity of £20 on promotion to a commission, on transfer to the army reserve, or on discharge without a pension.

If discharged with a pension he is eligible for an additional pension of sixpence a day for Europeans and threepence a day for non-Europeans, if not already in receipt of such additional pension. The badge is a silver cross, bearing the imperial crown on each arm, with the letters G.R.I. in the centre. The ribbon, white, purple and white, is worn on the left breast, immediately following the V.C., before decorations and medals, but after all orders. See Medal.

Military Engineering. SCHOOL OF. British military instruction centre. Situated at Chatham, it is the official headquarters of tuition in engineering for the army. Here officers and men destined for the

Royal Engineers (*q.v.*) undergo a course of instruction for two or more years, which includes, in addition to purely engineering subjects, knowledge of fortifications, surveying, photography, science, astronomy, as well as drill, and general military instruction and musketry. Special courses are given in field-engineering, while higher branches include mining, telegraphy, drawing. The school has at its head a general officer known as the commandant.

Military Frontier. Name given to certain border districts for which special protection is necessary. The military frontier of the Austro-Hungarian Monarchy was organized in 1535 for defence against Turkey, and was peopled by Christian fugitives. Made a crown land with military administration in 1849, it consisted of the Transylvanian military frontier, abolished 1851, parts of the Banat and the county of Bacs-Bodrog, incorporated in Hungary, 1872, and parts of Croatia-Slavonia united with that kingdom in 1881. *See* Marches.

Military Knights of Windsor. Body of retired military officers, forming part of the order of the



Military Knight of Windsor, full dress uniform

Garter (*q.v.*). When Edward III instituted the order in 1349 with 26 companions, he included in the foundation an equal number of canons and of veteran knights. The latter, known as Poor Knights, because wounds or other misfortune had rendered them incapable of

supporting themselves suitably, he endowed with an annual income and allotted quarters in Windsor Castle. Elizabeth reduced their number to 13 and re-endowed them.

In the reign of Charles I five more knights were added on a lower foundation. In 1919 an Act of Parliament was passed, decreeing that no further appointments should be made to the lower foundation, which will be absorbed, so that in future the knights will again number 13. One of them is governor of the rest, and he is given the rank of major-general if he does not already hold it. Appointments are made by the sovereign, and the knights are under the orders of the governor of Windsor Castle.

They have residences in the castle and a small annual stipend. They are the oldest military brotherhood in existence, and the only military body in England entitled to wear the national badge of S. George.

Military Medal. British military decoration. Instituted in 1916, it is conferred



Military Medal and ribbon

duty during German air raids. The ribbon is dark blue with three white and two crimson stripes. *See* Medal.

Military Police. Corps or detachment of troops detailed to aid in the maintenance of discipline and the like. In the British army they are under the command of the assistant provost-marshal of the division to which they are attached. They are responsible for arresting any persons not provided with passes, making improper requisitions, plundering, or committing offences against orders or military law; for guarding against spies in the district; for collecting stragglers and returning them to their units; and for the control of traffic on lines of communication. *See* Police.

Military Service Acts. In the United Kingdom, four Acts passed to obtain men for service in the Great War. The first was introduced in the House of Commons by H. H. Asquith on Jan. 5, 1916, when the results of the Derby scheme had been made known, became law on Jan. 27, and came into force Feb. 10. It provided for the conscription of all single men and childless widowers between 18 and 40 years old. Ministers of religion were exempted, and provision was made for persons engaged on work of national importance, for those whose withdrawal from their ordinary duties would mean exceptional hardship, conscientious objectors, etc., tribunals being established throughout the country to adjudicate upon these cases.

The second bill, also introduced by Asquith, May 2, 1916, made military service compulsory on all males between 18 and 41, with exceptions as in the earlier measure.

It brought in, moreover, all youths of 18, retained in the army those whose periods of service had expired, and made provision for a further examination of cases of men already exempted. It became law on May 25, and came into force a month later. The third bill was a direct consequence of the German offensive of March, 1918; it was introduced on April 9, and became law on April 15. Its main provision was to raise the age of liability to military service from 41 to 50 and in the case of medical men to 55. None of these bills applied to Ireland, and all lapsed with the signing of peace in 1919.

The fourth bill was introduced in March, 1919, being necessary in order to maintain an army of occupation in Germany. It gave power to the Government to extend the compulsory period as far as April 30, 1920, for any man who at the end of the war was in the naval, military, or air forces. *See* Compulsory Service; Conscription.

Military Tournament. Military and sporting competition confined to members of the army, and often including such items as artillery driving, tent-pegging, fencing, etc. These tournaments are frequently preliminary to the Royal Naval and Military Tournament, London, held annually. *See* Tournament, Royal.

Militello. Town of Sicily, in the prov. of Catania. It is 18 m. S.W. of Catania, with which it is connected by rly., and carries on a trade in oil, wine, and silk. The town was destroyed by earthquake, 1693. Pop. 12,000.

Militia. Bodies of civilians trained and occasionally exercised for home defence alone. At the end of the 19th century the militia of the United Kingdom resembled the volunteers of Great Britain in being civilians who of their own free will joined a training corps which should be available for defence against an invader, but could not be sent overseas. Recruits were trained continuously for three months and afterwards annually for one month. In 1903 this militia disappeared under the Territorial and Reserve Forces Act, 1907, but the obligations of the T.F. were those of the old militia, though the character of its training remained that of the old volunteers.

The Channel Islands, however, Malta, and Bermuda retained this title for their defence forces. In March, 1921, during the reorganization of the reserve units of the British army, it was decided that one militia battalion should again be maintained for each regiment of regular troops. Canada describes her

army as militia, and the war minister is called the minister of militia and defence, and is assisted by a militia council.

Historically the British militia represents the Anglo-Saxon *fyrð*, or general levy, organized by shires and hundreds under Alfred. It declined under feudalism, but was restored to efficiency in Elizabeth's reign. The militia that defended the Eastern coasts against the French and the Dutch in 1666-67, was a force raised by the lords-lieutenant of counties at the expense of the inhabitants, and officered by county gentlemen, to whom commissions were granted on a property qualification. This militia was called out during the Jacobite rebellions in 1715 and 1745.

At the period of the Seven Years' War (1757) the liability of individuals to furnish militiamen ceased, and a new Act threw upon the parishes the obligation to provide men, who were chosen by ballot; but anyone upon whom the lot fell was permitted to furnish a substitute, and the parish could avoid the ballot altogether by securing volunteers. These substitutes and volunteers were of course procured by payment, and as much as £60 was received as bounty (*q.v.*) by a substitute at Plymouth in 1810. Householders formed militia clubs on insurance principles, in order to provide a fund for the purchase of a substitute in the event of any member being drawn for the militia. Yet these hired men could not be used for war overseas unless tempted by further bounties to join the regular army. In 1805 the War Office was paying nearly £40 a head for recruits, and while one man who had been drawn for the militia was compelled to serve at home or buy a substitute, another who had escaped the ballot could sell his services, at first for the militia and afterwards for the regular army.

The Impressment Act of 1779 in theory touched only the criminal and vagabond classes; no law ever compelled British subjects generally to serve in foreign wars until in 1916 the Military Service Act (*q.v.*) was passed. The procedure of calling out the militia for permanent duty was termed embodiment, and from 1759-62, from 1778-83, from 1792-1802, and from 1803-16 the militia was embodied to form the home garrison in the absence of the regular forces. During these periods the militia regiments reached a high state of efficiency, and every inducement was offered to the men to enlist individually in the army. Indeed, the national value of the British militia has

always been estimated from the number of recruits it furnished to the regular service. The militia was again embodied during the Crimean War, 1854-56.

In 1867 one-fourth of each battalion of militia was invited to accept the same liability to foreign service as the army reserve, in consideration of an annual bounty of 20s.; these volunteers were known as militia reservists. The militia did good service during the S. African War of 1899-1902, but their voluntary offer to go abroad was on condition that the men should serve under their own officers like a regular unit. Five years later, 1907, R. B. Haldane brought the militia into his scheme for an expeditionary force, by abolishing all units as militia and reviving most of them as special reserve battalions, whose function in war was to furnish drafts for the regular battalions. In 1914-17 practically all reinforcements for the 1st and 2nd battalions at the front, both as regards officers and men, were furnished by the 3rd (old militia) battalions, then called the special reserve.

Italy has an active and a territorial militia in lieu of landwehr and landsturm. The U.S.A. has a militia on the British pattern called the National Guard. Holland has militia reservists who retain their arms and kit like the British Territorial Force. The army of Switzerland is called a militia. The term militia is used in different senses by different countries, but it always implies that troops so designated are either partly trained soldiers, or that their obligation does not extend to foreign service—generally both. Militia differ from regular soldiers in that they do not serve continuously for a term of years, and from volunteers in that they serve in war or undergo military training in peace by legal compulsion. See Army, British; Territorial Army.

Miliukov, PAVEL NIKOLAIEVITCH (b. 1859). Russian statesman. Born Jan. 27, 1859, he was



Pavel Miliukov,
Russian statesman

educated in St. Petersburg and Moscow. He lectured in Moscow on history, 1886-95, but was expelled on political grounds. Hethen went to Sofia in a similar capacity, but the Russian government procured his dismissal after two years. Returning to Russia in 1899, he was arrested in 1901 and imprisoned for presiding at a secret political

meeting. In 1902 he lectured in America, and in 1904-5 studied in London. Returning to St. Petersburg in 1905, he was elected to the first Duma, but was not allowed to sit, became leader of the Cadets or Constitutional Democratic party, and was a member of the third Duma. He was a member of the Russian parliamentary delegation to Britain in 1909. After the revolution of March, 1917, Miliukov became minister for foreign affairs, resigning in May of that year.

Milk. Liquid secreted in the udder of the female animal. The milk of the cow plays a very important part in human life, especially as it is the source of butter and cheese. It is a natural emulsion, consisting of minute fat globules suspended in liquid. The average percentage composition of whole cow's milk is as follows: water, 87.10; albuminoids (casein, albumin), 3.50; milk-sugar (lactose), 4.75; butter fat, 3.90; ash, 0.75. In skim milk 90.0 is water, and in whey 93.4 p.c. Separated milk resembles skim milk, except that practically all the fat has been removed.

The composition of cow's milk, however, varies considerably. Breeds differ greatly in the amount and quality of milk yielded, the richest being from the Channel Island breeds. Other milking breeds giving a good quality are Shorthorn, South Devon, Longhorn, Red Poll, Ayrshire, Kerry, Dexter, and British Holstein. The maintenance of a thoroughly good herd is the first essential in successful dairy farming. The standard to be aimed at is not less than 600 galls. per cow per annum. The use of a bull belonging to a good milking strain is of primary importance, for the male transmits good milking qualities to his female offspring. Milk from the same cow also varies during the period of lactation, falling off in the later stages, and even at the same milking the last drawn part, called strippings, is the richest.

Milk is a particularly good medium for the growth of all sorts of germs (bacteria), not only those which are essential to good butter and cheese making, but also some which are inimical to these, and others again that transmit disease, such as cholera, typhoid fever, and tuberculosis. Complete cleanliness, therefore, should be maintained in every stage of dairy work, in the transport of milk, and at all times during the sale of the same. Several means are adopted to check the action of injurious bacteria, one being the addition of small quantities of

such preservatives as formalin, or boric acid, a highly undesirable practice. All germs can be destroyed by exposing the milk to a high enough temperature to cause sterilisation, but the product is injurious to the health of children and has an unpleasant scorched taste, due to the burning of the milk sugar. A better plan is pasteurisation, by which disease germs are destroyed, and those which interfere with butter or cheese making are kept in check. The milk of goats is practically free from the germs of tuberculosis.

Condensed milk is the name given to milk from which most of the water has been removed by evaporation at a comparatively low temperature and in a partial vacuum. In 1850, de Leinae, a Frenchman, succeeded in evaporating milk in an open pan, but the method now widely in use was patented in 1856, in America, by Gail Borden. Sugar may or may not be added, and the finished product is usually kept in hermetically sealed tins.

Milk powder or desiccated milk was known as an article of commerce as far back as 1870. In essence the process consists in drying the milk on steam-heated cylinders. The milk is obtained from tuberculin-tested cows and is filtered through a special filter to remove the dirt, cooled and kept at a low temperature in insulated vats. The cows are milked by machinery which delivers the milk into closed vessels. The milk is tested for its total solids and standardised by the addition of lactose and butter-fat, and the drying process rapidly carried out.

MILK TESTS. Careful analysis of a large number of samples of whole milk, taken during the different months of the year, give as an average: percentage of total solids, 12.63, consisting of fats, 3.75 and non-fats, 8.88; specific gravity, 1.032. The legal standard as laid down in the Sale of Food and Drugs Act, 1899, is 3 p.c. fat and 8.5 p.c. of non-fatty solids. It is established, however, that unadulterated milk often falls below the fat standard thus laid down.

The specific gravity of milk is usually determined by a lactometer. More accurate results are obtained by the Westphal balance, a kind of small steelyard with a weight that is suspended in the milk to be tested. In either case the specific gravity must be taken at 60° F., or a correction made if the temperature is higher or lower. The amount of butter fat is most speedily determined by the

Gerber centrifuge, in which small test bottles are whirled round at a great speed. Each bottle is provided with a narrower tubular portion that is turned towards the centrifuge, and in which the fat collects. Before being placed in the machine the test bottle is filled with 10 cubic centimetres of dilute sulphuric acid (sp. gr. 1.820 to 1.825), 11 c.c. of milk, and 1 c.c. of amyl alcohol. The acid dissolves the non-fatty solids, the fat being separated in an oily form, a process that is helped by the alcohol. Given the fat percentage and the specific gravity, it is possible to calculate the total solids by means of a formula. See Butter; Cattle; Cheese; Dairy Farming; Diet; Public Health; consult also Milk and the Public Health, W. G. Savage, 1912.

Milk. River of Canada and the U.S.A. Rising in the Rocky Mts. of Montana, near the Alberta boundary, it flows E. through Alberta for about 200 m. and then for a further 300 m. through Montana to the Missouri.

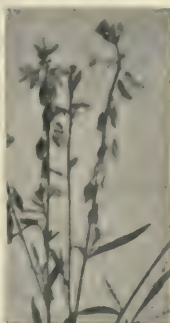
Milking. The process of extracting milk from the cow or goat. Usually it is done by hand labour, but machinery is now being used for the purpose. The udder of the cow consists of four separate sections or quarters, two fore and two hind, each of which is discharged from a teat of its own. In the ordinary English method the operator sits down after speaking to the cow, and begins with the fore quarters, grasping the teats part of the way round and pressing them against the palms by the finger tips. The pressure should be horizontal and applied at regular intervals, and the fingers must be kept on the teats until the fore quarters have been emptied. The movement must come from the wrists and not the elbows. The hind quarters are then treated in the same way, and when they are finished the fore quarters should be stripped again. The Danes ensure the final stripping of the udder by a rather elaborate kind of massage (Hegelund system).

On farms where a large number of cows are kept it is becoming increasingly the practice to milk by machinery, as this saves labour and promotes cleanliness, always provided the machine itself is kept scrupulously clean. The ordinary principle combines suction with pressure, and there should be a rhythmic or pulsating action. See Dairy Farming; Egypt.

Milk Sugar. Variety of sugar found in milk. It is obtained by evaporation after the removal of

the fat and casein. Milk sugar appears as sweet, rather gritty crystals, partly soluble in water, and is used in pharmacy. It is not so sweet as cane sugar, and chemically is better known under its alternative name of lactose (q.v.).

Milkwort (*Polygala vulgaris*) OR ROGA-TION FLOWER. Perennial herb of the natural order Polygalaceae. A native of Europe (including Britain), N. Asia, and N. Africa, it has



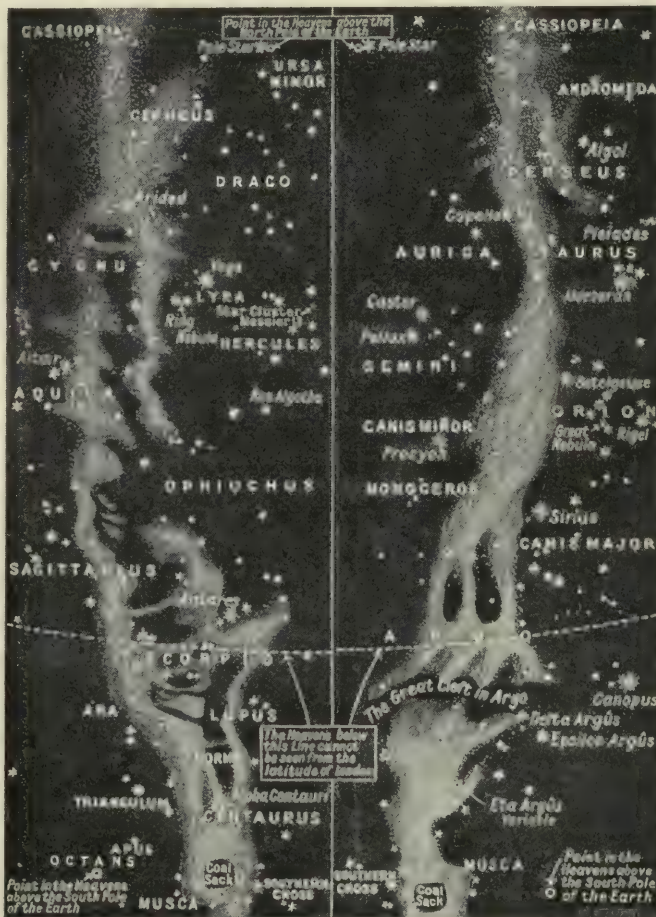
Milkwort. Flowering stems of the meadow herb

short, wiry stems and somewhat leathery, oblong leaves. Its flowers are white, pink, blue, or purple. It grows among grass in meadows and on heaths, and cows eating it were formerly supposed to yield more milk than ordinarily.

Milky Way. In astronomy, name given to the luminous band which appears to stretch across the sky at night. To the naked eye appearing a vast zone-shaped nebula, it appears through a telescope to consist of innumerable stars. Its stellar constitution, conjectured by Democritus, was one of Galileo's earliest telescopic discoveries.

A line drawn midway through it lies nearly on a great circle inclined about 63° to the celestial equator. It passes, in Cassiopeia, within 27° of the North Pole of the heavens and, in the Southern constellation of the Cross (Crux), equally near to the South Pole, while its own poles are in the constellations of Coma Berenices and Cetus. For over two-thirds of its circuit in the skies it preserves an appearance of unity. But near Alpha Centauri it is broken by a great fissure into two branches, one faint and the other bright, which rejoin in the neighbourhood of Eta Cygni. This rift between the branches is, however, nowhere free from fringes, bridges, filaments, and pools of starry spaces. There is yet another interruption to the Milky Way, in the constellation of Argo, where the undivided stream is cut across by a jagged chasm, with interlacing branches on either side.

The Milky Way is not a uniform starry stream. The elder Heraclitus counted many luminous patches in it; his son compared it to "clouds passing in a scud"; and to sand "not strewed evenly as in a sieve, but as if flung down by handfuls,



Milky Way. Pictorial diagram showing the position of the Milky Way relatively to the adjacent constellations. Its course unites where the overlapping is shown at both ends of the two parts of the diagram, i.e. at Coal Sack and Cassiopeia, thus forming a complete circle in the heavens

leaving dark intervals." The bright spaces are commonly surrounded and set off by dark winding channels, and the rapid alternation of astoundingly rich with poor, or almost vacant, spaces of sky, continually recurs. The most notable instance occurs by the Southern Cross, whose bright stars shine in a broad starry mass interrupted by a pear-shaped black opening 8° long by 5° wide, named the "Coal Sack." The blackness is not complete, in photographic plates; but there are other similar blacknesses. The stream varies greatly in width. It is no more than 4° wide when it enters the Cross. It is 22° wide across its double channel.

The theories of its structure are three—that it is a disk, a ring, or a spiral. Sir W. Herschel at one time favoured the idea of a cloven disk as the model of the stellar universe, and supposed that the Milky Way

was produced optically by the effect of stars, evenly distributed, and seen in perspective. The discovery, which he himself made, that the stars are not evenly distributed, shook the theory, and his son Sir John Herschel suggested for the Milky Way the "shape of a flat ring or some other re-entering form of immense and irregular breadth and thickness"—but remote from the space of the solar system, a disk with a scooped-out centre. Proctor suggested the idea of a spiral galaxy with curvilinear branches, and Easton a system of spirals. Professor Simon Newcomb concluded that the light from the Milky Way in most of its sections takes 3,200 years to reach the earth. A brilliant new star in the constellation of Cygnus was discovered in Aug., 1920, by W. F. Denning, an amateur astronomer of Bristol. See Stars.

Mill (Lat. *molere*, to grind). Originally a machine used for grinding. To mill means to reduce something, corn, for instance, to very small particles. It is also used for the process of giving a raised edge to coins. From its use for a machine the word has come to be used also for the building in which the machinery is, e.g. a flour-mill, and also for other buildings containing machinery, e.g. a cotton mill.

MILL, JAMES (1773–1836). British utilitarian philosopher, historian, and economist. Born near Montrose, Forfarshire, April 6, 1773, after studying at Edinburgh he came to London, and embarked upon a literary career.

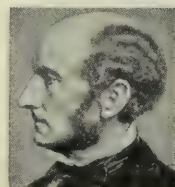


James Mill, British philosopher

His *History of India*, published 1817–18, led to his appointment as assistant-examiner, and afterwards head of the examiners' office, of the E. India Company, holding the latter office till his death.

In philosophy, he is one of the chief representatives of associational psychology. In his *Analysis of the Phenomena of the Human Mind* he reduces all psychological reality to one fact—sensation, and all its laws to one—the law of inseparable association, the factors of which are liveliness of impression, repetition, and interest. A friend of Jeremy Bentham, Mill contributed a brilliant series of articles, afterwards reprinted, to *The Encyclopaedia Britannica*, on legal and political subjects. In politics, Mill was regarded as the founder of philosophical radicalism. He died at Kensington, June 23, 1836. See Biography, A. Bain, 1882.

MILL, JOHN STUART (1806–73). British philosopher and economist. The son of James Mill, he was born in London, May 20, 1806. His education, begun by his father, was completed in France. An extraordinarily precocious child, at 14 he had acquired a knowledge of a great variety of subjects, including classical literature, logic and political economy, history and mathematics.



An acute mental crisis, induced by an exclusively intellectual education, was surmounted with the

J. S. Mill

help of a study of Wordsworth. From 1820-58 he was employed in the East India Office, and retired on a pension when the company came to an end. From 1865-68 he was M.P. for Westminster, in 1866 Lord Rector of the university of St. Andrews. He died at Avignon, May 8, 1873. The influence of Mrs. John Taylor, whom he met in 1830 and married in 1851, greatly affected his views, and tended to modify and humanise his doctrinaire Benthamism.

From an early age Mill was engaged in literary work, writing books and contributing to reviews. His *System of Logic*, 1843, is an elaborate exposition of the theory and methods of induction. The basis of induction is not belief in the uniformity of the laws of nature, but the laws of causality, resting on the fact that we see a succession of phenomena always occurring in the same order. His metaphysical standpoint is set forth in his *Examination of Sir William Hamilton's Philosophy*, 1865. He is strongly opposed to all forms of intuition, while he admits the reality of the external world and of mind, as based upon the principles of association. Matter is a permanent possibility of sensation, and mind a series of feelings with a background of possibilities of feeling. In Ethics, he is an altruistic utilitarian. Happiness is the highest of all aims, not a selfish happiness, but a happiness identical with that of mankind in general. Happiness itself differs not only in quantity, but also in quality; there are higher and lower kinds of it, the former chiefly intellectual. Moral judgements and feelings are the result of association.

For many years Mill was an enthusiastic admirer of Comte's system of positive philosophy. When a young man he had founded a utilitarian society. His *Principles of Political Economy*, 1848, the object of which was to systematise and complete the theories of Adam Smith and Ricardo, is still considered indispensable for the study of the subject. He was the first to give a full description of the phenomena which determine current value, and also to see that exchange is not a primitive and necessary phenomenon, but only relative to a certain mode of appropriation. Hence value is not a natural and necessary quality of wealth. It is a relative term; there is no such thing as a general rise or a general fall of values. The temporary or market value of a thing depends on the demand and supply. The demand varies with the value, and the value always so adjusts itself

that the demand is equal to the supply. In politics, Mill, at least in his later years, belonged to the advanced radical party. His essay *On Liberty*, 1859, represents his mature political views. He was a warm defender of the rights of the working classes and an enthusiastic advocate of women's suffrage. See *Liberalism*; *Utilitarianism*.

Bibliography. Autobiography, 1908; Lives, A. Bain, 1882; W. L. Courtney, 1889; J. S. M., a Study of his Philosophy, C. Douglas, 1895; The English Utilitarians, L. Stephen, 1900.

Millais, Sir John Everett (1829-96). British painter. Born at Southampton, June 8, 1829, he



J. E. Millais

Self-portrait, Uffizi Gallery, Florence

came of a Jersey family, and was taken thither at an early age. Some drawings executed when he was seven were exhibited at the Academy in the winter of 1838. In 1838, on the recommendation of Sir M. A. Shee, he was sent to Sass's drawing school in Bloomsbury, and later to the R.A. schools. When ten he received a silver medal from the Society of Arts, and he took his first prize at the schools a year later. Shortly after 1848, with Holman Hunt and Rossetti, he started the Pre-Raphaelite Brotherhood.

Millais' first important picture, painted on the lines laid down by the P.R.B., was the *Banquet Scene from Keats' Isabella and the Pot of Basil*, exhibited in 1849, followed in 1850 by *Christ in the House of His Parents*, better known as *The Carpenter's Shop*. In 1921 a successful appeal was made to the nation to acquire the latter, then in the Tate Gallery, to prevent its being sold to the Melbourne Gallery, Victoria, Australia, the price being

10,000 guineas. Many similar pictures followed, notably *The Huguenot*, *The Proscribed Royalist*, *The Order of Release*, etc., but gradually Millais was escaping from the rigid lines laid down by his companions in the P.R.B. and developing definite characteristics of his own. Perhaps his two most important pictures executed under Pre-Raphaelite influence were *Autumn Leaves*, 1856, and *The Blind Girl*, one of his greatest works. Later he stayed with Ruskin in the N. of England and in Scotland. Sir Isumbras at the Ford, exhibited in 1857, marked a departure in style which evoked a protest from Ruskin. Its successors, *The Vale of Rest* and *Apple Blossoms*, clearly showed the emancipation of Millais from his early mannerisms.

In the sixties Millais was largely concerned with book illustration. From the time that he became an R.A. in 1863, there was a great demand for his portraits, considerable desire to obtain his landscapes, especially those painted in Scotland, and an ever increasingly enthusiastic public for his sentimental paintings, such as *The North-West Passage*, *The Princes in the Tower*, *The Yeoman of the Guard*, and *The Princess Elizabeth*. Among his finest portraits must be mentioned those of the Marquess of Hartington, Lord Tennyson, Cardinal Newman, Sir James Paget, Gladstone, Du Maurier, and Mrs. Jopling.

Millais in 1855 married the lady who had been Mrs. Ruskin, but who had obtained a decree of nullity of her first marriage. He was created a baronet in 1885, succeeded Lord Leighton, as P.R.A., Jan., 1896, and died of cancer of the throat Aug. 13, 1896. He was buried in St. Paul's Cathedral.

Millais was a buoyant, popular personality, strong, manly, and genial. It is by his Pre-Raphaelite pictures and his portraits that he will best be known. His pictorial work in black and white can hardly be paralleled. Its charm, dignity, and importance were remarkable. He cannot be regarded as an inspired painter, and in his landscapes showed himself unacquainted with the subtleties of atmospheric effect or momentary illumination. He was, however, a man of amazing patience and surprising quickness of vision, and he spared no toil to arrive at what seemed to him to be pictorial expression. See *Armlet*; *Art*; *Huguenot*; *Pre-Raphaelites*. *Pron.* Millay.

Bibliography. Millais and his Work, M. H. Spielmann, 1898; Life and Letters, J. G. Millais, 1899; Lives, A. L. Baldry, 1899; J. E. Reid, 1909.

Millard, EVELYN (b. 1873). British actress. Born in Kensington, Sept. 18, 1873, the daughter of John Millard, who taught elocution at the Royal Academy and the Royal College of Music, she made her first appearance at The Haymarket in



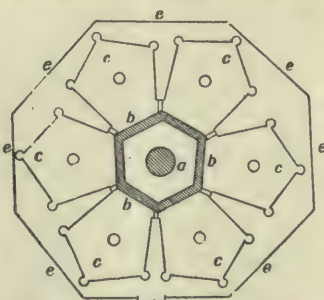
Evelyn Millard,
British actress

1891. After studying with Sarah Thorne she played important rôles under the management of George Alexander, Beerbohm Tree, and Lewis Waller, and was in management on her own account in 1908-10 at the Garrick, Criterion, and New theatres.

Millau. Town of France, in the dept. of Aveyron. It lies on the right bank of the Tarn at the S.W. end of the Cevennes, 74 m. by rly. N. of Béziers. The church of Notre Dame is in a mixture of Romanesque and Renaissance, and there is a notable square with arcades dating from the 12-15th centuries. During the 16th and 17th centuries it was a Calvinist centre; its fortifications were destroyed under Richelieu in 1620. The chief industry is the manufacture of kid gloves. Pop. 18,000.

Millbank. District of S.W. London, in the city of Westminster. While the name applies strictly to the thoroughfare on the left bank of the Thames between Great College Street and Grosvenor Road, it is given also to much of the area between Great College Street and Vauxhall Bridge Road. On the river bank, originally built to act as one side of the mill-race serving the mill of the abbot of Westminster, are the Victoria Tower Gardens. The chief buildings include the Tate Gallery, Royal Army Medical College (q.v.), Queen Alexandra's Military Hospital, Military Nurses' Home, Millbank Barracks, and a block of model dwellings.

What was first known as Millbank Penitentiary was the outcome of an Act of 1778, providing for penitentiary houses in accordance with certain ideas set afoot by John Howard and other prison reformers. It was modelled



Millbank. Plan of the old London penitentiary. a. chapel and governor's house. b. c. Bastions. d. Entrance. e. External walls

by Sir Robert Smirke on the lines described in Jeremy Bentham's Panopticon, or the Inspection House, 1778. Built in 1812-22, at a cost of more than £500,000, on ground bought in 1799 from the



Millau, France. General view of the town looking toward Causse Noir, a height of the Cevennes

marquess of Salisbury, it resembled a wheel, the axle of which comprised the chapel and governor's house. From this radiated six bastions, each with five sides and terminating externally in towers.

The external walls, forming an irregular octagon enclosed upwards of 16 acres, and were once surrounded by a moat. The buildings were of three storeys, were connected by covered ways with the chapel, and the dark passages, staircases and tortuous windings of the interior proved bewildering even to old warders. Every convict sentenced to transportation was first sent here and was solitarily confined. The system represented by the penitentiary was condemned in 1843, and the place, made a military prison in 1870, was closed Nov. 6, 1890, and pulled down in 1903. See Memorials of Millbank, A. G. F. Griffiths, 1875.

Millboard. Material made from wastepaper, rags, rope, and similar scrap. They are pulped and hydraulically pressed into sheets varying from $\frac{1}{4}$ to $\frac{1}{2}$ inch thick and up to 12 ft. by 6 ft. in

size. Millboard is used for railway carriage panelling and partitions, and for book binding, etc.

Millbrook. Parish of Hampshire, England. It stands on the Test, partly within the bor. of Southampton, with a station on the L. & S.W. Rly. See Southampton.

Millennium (Lat. *mille*, a thousand; *annus*, a year). Period of 1,000 years. The term is used specifically of the ancient idea of a kingdom of Christ upon earth. Whereas many of the later Jews, basing the idea on a literal interpretation of O.T. prophecies, looked forward to the earthly millennium as the final goal, the Christian idea, based upon Rev. xx, 1-7, was of a prelude to the blessedness of heaven.

Much discussion has taken place as to the meaning of the words of S. John, who foresaw Satan being bound and the martyrs dwelling with Christ for 1000 years, at the end of which period Satan, loosed again, was to make his last assault upon the saints before being cast into the lake of fire. The doctrine of the millennium, also known as Chiliasm (Gr. *chilioi*, a thousand), was condemned because of the excesses to which it gave rise; but it still exists in various forms and it formed part of the creed of several Evangelical divines. See Adventists; Anabaptists; Antichrist; Fifth Monarchy Men.

Millepora. Name given to a family of hydrocoralines which occur in the warmer seas. They form large chalky masses, covered with tiny pores through which the polyps protrude. These small pores are arranged in a circle around a larger central one, from which protrudes a polyp provided with a mouth and specialised to act as the feeding member of the group. The smaller pores are occupied by polyps of longer body, whose function is to catch the prey and pass it to the mouth of the feeding polyp. Below the surface of the "coral" are numerous canals, which connect the different polyps into one compound organism. See Coral.

Miller, HUGH (1802-56). Scottish geologist and writer. Born at Cromarty, Oct. 10, 1802, he was apprenticed as a mason and



Hugh Miller,
Scottish geologist

quarryman. In 1834 he became accountant in a bank at Cromarty, and next year published scenes and legends of the North of Scotland.

In 1839 a letter published in Edinburgh on the Auchterarder case (see Free Church of Scotland) brought him into prominence with the Evangelical party in Scotland, who appointed him editor of the journal they established to advocate their policy. Known as *The Witness*, it was first issued on Jan. 15, 1840, and appeared bi-weekly. Miller was the editor, and later also its owner until his death. Owing to temporary insanity, due to overwork, he shot himself, Dec. 23, 1856.

In addition to being one of the recognized leaders of the Free Church of Scotland, founded 1843, Miller was widely known as an advocate of education, franchise, and other reforms. But his reputation rests on his popular works on geology. *The Old Red Sandstone*, 1841, first appeared in *The Witness*. Then came *Footprints of the Creator*, 1847; *Thoughts on the Education Question* (reprinted from *The Witness*), 1850; *My Schools and Schoolmasters*, 1852; and others. See *Life and Letters*, P. Bayne, 1871; Hugh Miller, W. Keith Leask, 1896.

Miller, JOAQUIN (1841-1913). American poet, whose real name was Cincinnatus Heine Miller.



Joaquin Miller,
American poet

Born in Indiana, Nov. 10, 1841, he was for some time a gold-miner in California and served as a volunteer in Walker's Nicaragua expedition. He lived for five years among the Pacific Coast Indians, and in 1863 became a practising barrister, and in 1870 a county court judge in Oregon. Later he did a good deal of work as a journalist. He died Feb. 17, 1913. He is best known by his *Songs of the Sierras*, 1871, and by his melodrama of Mormonism, *The Danites*, 1880.

Miller, JOSEPH OR JOE (1684-1738). English comedian. An entirely illiterate man, who is said to have married because he wanted someone at hand to read his parts to him, he made his first appearance at Drury Lane, Nov.



28, 1709, as *Teague in Sir Robert Howard's comedy The Committee*, and subsequently won success as a low comedian in many

comedies by Steele, Congreve, Farquhar, and Vanbrugh. He died Aug. 16, 1738. The year after his death John Mottley the dramatist brought out a collection of jocular anecdotes, *Joe Miller's Jests*; or *The Wit's Vade Mecum*, which he unwarrantably fathered upon him.

Miller, PHILIP (1691-1771). British botanist. Born near Greenwich, he studied botany, and in 1722 was appointed curator of the physic garden at Chelsea. He enriched the gardens by the introduction of new and rare plants, holding his post until 1739. He died at Chelsea, Dec. 18, 1771. Miller's great work, *The Gardener's Dictionary*, first appeared in 1724. His other books include *Catalogue of Trees near London*, 1730; *The Gardener's Kalendar*, 1732; and *Introduction to Botany*, 1760.

Miller, WILLIAM (1796-1882). Scottish engraver. Born at Edinburgh, May 28, 1796, he studied engraving in London under George Cooke, but settled at Millerfield near Edinburgh to practise his art.



William Miller,
Scottish engraver

The better part of his work consists of engravings after Turner, which Ruskin valued highly. Later in his life he travelled and painted in water-colours, exhibiting at the R.S.A., of which he was an honorary member. He engraved Turner's work in the *England and Wales* series, and illustrated in engraving Rogers's poems and Scott's works. He died at Millerfield, Jan. 20, 1882.

Millerand, ALEXANDRE (b. 1859). French statesman. Born in Paris, Feb. 10, 1859, he studied law, was admitted to the bar in 1881, and attained immediate prominence by his defence of the miners of Montceau-les-Mines in 1882. Elected deputy for Paris in Dec., 1885, he quickly acquired a leading position in the Radical-Socialist party, and in 1887 was made a member of the Budget Committee.

When the Boulangist movement developed, Millerand opposed it in *La Voix*, of which he was editor, and in 1889 was re-elected deputy, defeating a Boulangist candidate. In the Chamber he devoted special attention to social questions, fiscal reforms, and the organization of workmen's syndicates. He defended the syndicates that were prosecuted as illegal organizations, and became parliamentary leader



Alexandre Millerand, French statesman

of the Socialist party and editor of *La Petite République*, the party organ, vacating that position in 1896 to become managing director of *La Lanterne*, where Aristide Briand and René Viviani were on his staff. In 1896 he outlined the minimum programme of the Socialist party in a sensational speech. Waldeck-Rousseau chose him as minister of commerce in 1899, and he then initiated measures for the improvement of the conditions of female labour, for a weekly day of rest, workpeople's pensions, the extension of syndical rights, and the foundation of the national office for the protection of industrial property.

After the fall of the Waldeck-Rousseau cabinet in 1902, Millerand continued to work on the completion of this legislative programme. In July, 1909, he was appointed minister of public works, an office he held until Nov., 1910, organizing the State railway system. Poincaré appointed him minister of war in Jan., 1912, and when he left that office in 1913 he devoted himself chiefly to military questions, urging energetic preparation against the German invasion, which he foresaw. Directly war broke out Millerand was made president of the committee on supplies at the ministry of war, and on Aug. 25, 1914, returned to the ministry of war, remaining in office until the Viviani cabinet resigned in 1915. Millerand was elected a member of the Academy of Moral and Political Sciences in 1917, and on the conclusion of the armistice in 1918 he was appointed commissioner-general for Alsace-Lorraine.

Millerand succeeded Clemenceau as premier after Deschanel's election to the presidency of the republic, also undertaking the office of foreign secretary, and formed his cabinet on Jan. 19, 1920. He was called upon to act in very

critical circumstances, as, for example, the German reparations question, the future of Central Europe, and the settlement of internal affairs in France. He was a prominent figure of the Allied conferences at Lypmpe in May and Aug. of that year. Deschanel, who had been elected president over the head of Clemenceau, was compelled to resign in Sept. The election for a new president, held on Sept. 24, resulted in an overwhelming majority for Millerand, who received 695 votes as against 69 received by M. Delory, the Socialist candidate. He resigned the presidency in June 1924 following an adverse vote in the Chamber.

Miller's Thumb. Popular name for the small fresh-water fish, *Cottus gobio*. It is better known under its name bullhead (q.v.).

Millet. General term for a number of grasses grown either for fodder or for their seeds (grain), which constitute important sources of food. Among the latter are kurraikan or ragi (*Eleusine coracana*), extensively grown in India, Ceylon, and Africa; in India estimated to yield about 25,000,000 cwt. of grain per year. The millets proper are various species of *Panicum*, cultivated in India and S. Europe.

The variety *frumentaceum* of *P. crusgalli* is known in India as shâma or sâme. The common millet is *P. miliaceum*; the little millet is *P. miliare*; the Italian millet, *Setaria italica*, has been in general cultivation in Asia from the most remote times. Indian millet, Kaffir- or guinea-corn, is *Sorghum vulgare*, whose grain is known as durra. It is an important cereal in S. Europe, Africa, and Asia, the seeds yielding a fine white flour suited for bread-making. The stems of the var. *sacharatum* yield sugar. The fodder millets are Guinea-grass (*Panicum maximum*), Mauritius-grass (*P. molle*), barnyard-grass (*P. crusgalli*), etc. Guinea-grass grows very rapidly, eight cuts having been obtained in one year. See Indian Millet.

Millet, Aimé (1819-91). French sculptor and painter. Born in Paris, Sept. 27, 1819, he was a pupil



Aimé Millet,
French sculptor
After L. Bonna

of David d'Angers and of Viollet-le-Duc, and entered the École des Beaux Arts in 1836. His chief works are *Jeune Pâtre pleurant son chevreau*, 1849; *Ariadne*,

1857 (Luxembourg Museum); the huge statue of Vercingetorix for the plateau of Alise, Côte-d'Or, 1865; the tomb of Henri Murger in Montmartre cemetery; and a group of figures on the Opera House in Paris. He also painted copies of Italian and Spanish old masters. He died in Paris, Jan. 14, 1891.



Self-portrait in crayon, 1846-47

1814, the son of Normandy peasants, he received early instruction from Mouchel, in Cherbourg, in 1832, and later from Langlois. He went to Paris with a scholarship, 1836, and entered Delaroche's studio, where Diaz and Rousseau were also students. He commenced by painting elegant pictures and nudes, as *L'Amour Vainqueur*. For a time he painted signs at Cherbourg, returning to Paris in 1842. In 1849 he settled at Barbizon as a painter of pictures of peasant life, for the naturalistic, but dignified and sympathetic treatment of which he has few equals. Some of his pictures have become, through reproduction, world-famous. The *Sowers* was exhibited in 1851; *The Gleaners*, 1857; *The Angelus*, and *Death and the Woodcutter*, 1859; *The Man with the Hoe*, 1863. He was commissioned in 1873 to decorate the Pantheon with the *Four Seasons*, but only charcoal studies were produced. He died Jan. 20, 1875. See *Angelus*; consult *Lives*, A. Sensier, Eng. trans. H. de Kay, 1881; J. C. Ady, 1910. *Pron.* Meelay.

Mill Hill. District of Greater London. Between Edgware and Tottenham, and once a hamlet of Hendon, it is 8½ m. from London by the G.N.R., and 9 m. by the M.R. The straggling, picturesque old village, at an elevation of 400

ft., commands some of the most delightful views in the co. of Middlesex. Here are Mill Hill School (q.v.); the parish church of S. Paul, 1829-36; S. Joseph's missionary college of the Sacred Heart; two convents; the Linen and Woollen Drapers' Cottage Homes; and the barracks. S. Vincent's Convent was once known as Little-berries House, said to have been built by Charles II, and to have had Nell Gwynn as occupant. On the site of Mill Hill School were the gardens of Peter Collinson (1694-1768), naturalist and antiquary. William Wilberforce and Sir Stamford Raffles lived at Highwood. Pop. 4,400.

Mill Hill School. English public school. Founded in 1807 as a school for the sons of Non-conformists, its constitution was remodelled in 1869. It has a fine range of buildings, standing in grounds of 70 acres, at Mill Hill, London, N.W. There are five houses, accessories in the shape of laboratories, etc., accommodation being provided for about 300 boys. The school is divided into upper, middle, and lower, and there are classical and modern sides. Although mainly supported by Non-conformists, there are no sectarian tests. There are scholarships, both to the universities and to the school itself. A Gate of Honour commemorates the 200 old boys who fell in the Great War.

Millibar. Thousandth part of a bar, the meteorological unit of atmospheric pressure. The older practice of speaking of atmospheric pressure as equal to so many inches, or millimetres, is open to objection, for these are units of length, not of pressure. A bar is equal to the pressure of a column of mercury 750 millimetres, or 29·53 inches high at 0° C. in latitude 45°. The millibar has been used by the British Meteorological Office since May, 1914. See *Meteorology*.

Millième. Egyptian copper coin. It is the tenth part of a piastre, or the one-thousandth of an Egyptian pound. The ½ piastre is called 5 millièmes. The millième is nominally worth about a farthing. See *Piastre*.

Millinery. Term applied to the making and confection of women's hats and other headwear. It comes from Milaner, a dealer in Milan goods, hence in the 16th century a seller of needles, cutlery, haberdashery, fancy goods, and hats, a considerable supply of which was derived from N. Italy. The centre of the millinery trade is now Paris, where the best training is probably to be obtained. See *Costume*; *Dressmaking*; *Fashion*.

Milling. Process of grinding grain, especially wheat, into flour. The world's merchant flour-milling is now carried out, except as regards a small fraction of the whole, by automatic systems based upon the employment of chilled-iron rolls.

The grain is first cleaned and prepared in the screen house, where numerous appliances secure the separation of stones and other impurities, the removal of foreign seeds such as barley and cockle, and the scouring, washing, and conditioning of the grain. Separate machines are required for each of these processes, and on the thoroughness with which the work is carried out depends the quality of

the finished flour. In the final process of conditioning all moisture is removed from the skin of the wheat. After the cleaned grain reaches the blending bins the operation of milling begins.

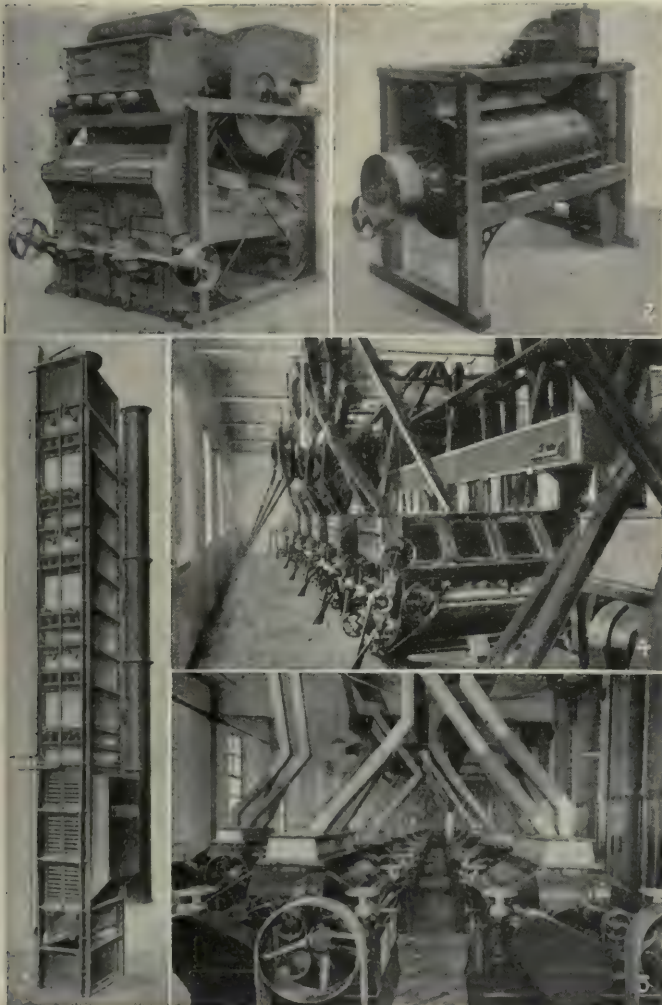
Rolling mills are of two kinds. Break rolls extract the endosperm or floury parts from the bran; reduction rolls grind the floury parts by successive stages until they pass through the flour silk in the final form. In the break mills, each usually containing two pairs of rolls in one frame, there is normally a system of four grades, the rolls of the first two being coarsely, and of the last two finely, grooved with flutings resembling elongated saw-teeth. The first

break rolls receive the whole berry and open it out; the second, to which the half-grains are fed, free the endosperm in the form of semolina, or particles between 18 and 40 mesh in fineness. The third break, which receives the thinned half-grains, frees the endosperm in the form of middlings, or particles between 40 and 82 mesh, the still finer particles being called dust. The wheat-skins enter the fourth break, which scrapes off the endosperm still adherent, leaving the bare skin or bran.

Between each successive break scalpings, clothed with wire mesh of increasing fineness, separate the break flour, semolina, middlings, and dust from the broken wheat and bran. The materials sifted out, called throughs, and those too coarse to pass the mesh, called overtails, are collected from the first three breaks, mixed, and further graded. Purifiers remove the branny and fibrous matter, and grade the stock in definite divisions suited for the operation of reduction.

Reduction is effected by rolls of the same pattern as break rolls, but usually much shorter, and either granular—although called smooth—or very finely fluted. The reductions vary up to fourteen according to the size of the mill. The first two pairs flatten the germ and size down or crack the semolina and middlings respectively. The third rolls receive the granular matter in which the gluten is chiefly contained, and further reductions follow, including two by scratched rolls, which free the semolina from bits of adhering bran. Finally dressers sift away the finely reduced material and pass it through silk of 94 to 156 mesh in the form of finished flour. *See Flour.*

Millipede. Order of arthropods, which with the centipedes form the zoological class Myriapoda (many-footed). They have long rounded and segmented bodies, with a hard chitinous covering, and usually two pairs of legs on each segment. Their legs are certainly very numerous, but not so numerous as to justify the name "thousand-footed." They differ from the centipedes in being vegetarian, and they lack the poison claws. Great Britain has several species, which may be found lurking under stones in the daytime and rolling themselves into a coil when disturbed. They do little harm to crops except when they become numerous, when they are best checked by dressings of lime and soot. *See Myriapoda.*



Milling. 1. Milling separator for removing stones and impurities from the grain. 2. Emery wheat scourer for cleansing the grain. 3. Conditioner, in which the grain is dried after being washed and scoured. 4. Machines for purifying ground wheat, separating the bran and fibrous matter. 5. View on the rolling floor of a mill, where the grain is finally reduced to flour.

By courtesy of Henry Simon, Ltd., Manchester

Millom. Urban dist. of Cumberland. It stands on the W. side of the estuary of the Duddon, 9 m. from Barrow-in-Furness, with a station on the Furness Rly. The chief building is the church of Holy Trinity, partly Norman, with some very interesting features. Millom grew up around a castle built here about 1100; this was long the residence of the Huddleston family, and in the Middle Ages its lords had the power of sentencing their dependents to death. It was besieged during the Civil War, and is now a ruin. Millom owes its modern growth to the development of the Furness coal and iron field. Iron ore is mined here, and there are large furnaces and ironworks. Pop. 8,600.

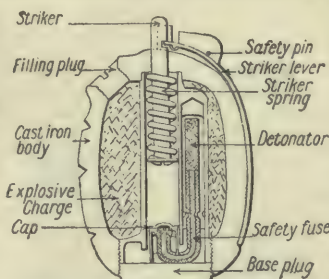
Millom arms

Mill on the Floss, THE. Novel by George Eliot (*q.v.*), published in 1860. Her third work of fiction and second long novel, it is a companion work to the earlier *Adam Bede*, as a close and detailed picture of English provincial life. Its prime interest is as a study of a brother and sister, preserving some of the most charming recollections of childhood to be found in English literature, and further it contains a series of portraits of the other members of the Tulliver family, which are so many masterly etchings.

Millport. Police burgh and watering-place of Buteshire, Scotland. It stands on the S. side of the island of Great Cumbrae, 24 m. from Greenock. The chief building is the episcopal cathedral. Here is a marine biological station, and for visitors golf links and bathing. Millport has a regular steamboat service with the ports on the Clyde. The opening of the sea on which it stands is called Millport Bay. Pop. 1,600.

Millport arms

Mills Bomb. Hand grenade, designed during the Great War, and used by the British and Allied



Mills Bomb. Sectional diagram showing principal parts and explosive mechanism

troops. Deriving its name from its inventor, it consists of a serrated cast-iron body, with an internal striker, surrounded by a strong coil spring. The spring is maintained compressed, and the striker held away from the cap by the external striker lever, which pivots in slots in two lugs cast on the body, one end of the lever engaging with a slot in the striker. The striker lever is prevented from rising by a safety pin which passes through holes in the lugs. The cap is fastened to one end of a 1½-in. length of safety fuse, the other end of which is secured to the detonator by crimping. The explosive is loosely stemmed amatol or ammonal, and the weight of the complete grenade is about 1½ lb.

When required for use, the grenade is held in the right hand, the striker lever being pressed against the side of the bomb. The safety pin is withdrawn, and the grenade thrown with a motion like overhand bowling. As soon as it is released from the hand, the striker lever flies up and leaves the grenade, the striker is driven down on to the cap by the spiral spring, thus igniting the safety fuse, which burns for about four seconds, and then fires the detonator, exploding the charge. These grenades may also be fired from the rifle by

attaching an 8-inch rod to the base plug, and inserting the rod in the barrel. A cup is fixed to the rifle muzzle to hold the striker lever until the grenade is discharged, a special blank cartridge being used. From the rifle the grenade has a range of about 300 yds., as compared with 40-50 yds. when thrown by hand. See Ammunition; Grenade.

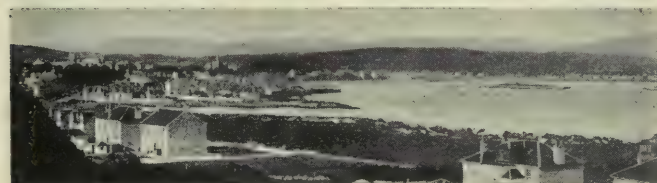
Mill Springs, BATTLE OF. Federal victory in the American Civil War, Jan. 18, 1862. The Confederate lines defending the South from invasion by the Federals were, at Mill Springs, a village some 10 m. W. of Somerset, Kentucky, held by General J. B. Crittenden. With the opening of the 1862 campaign Gen. George H. Thomas advanced towards this place with a force of 4,000 men. Crittenden hastened to meet him, and launched an attack which developed into a fierce fight. The Confederate forces, despite their valour, were driven back and routed with heavy loss. It is sometimes called the battle of Fishing Creek. A national cemetery was afterwards set up here, over 700 bodies being interred therein. See American Civil War.



Millstone used by women in Palestine for grinding corn by hand. This form is of great antiquity

Millstone. Wheel or circular mass of rock used for grinding grain. The best rocks for the purpose are the burr stones of France, being hard and porous. They are found in the Tertiary of the Paris basin, and large millstones are usually built up. The German millstones are a basaltic lava found near Cologne. Sandstones and grits are used for millstones, the characteristics of which should be open or cellular structure, toughness and hardness, as the coarse granular sandstone found in New York and other parts of the U.S.A. Millstones are being gradually superseded by steel rollers in the manufacture of flour. See Milling.

Millstone Grit. In geology, name given to a hard siliceous conglomerate rock. Millstone grits are



Millport, Buteshire. View of the town and southern shore of Great Cumbrae Island

extensively found in Great Britain and vary considerably in composition. A typical example is the Farewell Rock in South Wales, while the formation is estimated to be some 5,000 ft. in thickness in Lancashire. The rocks rest upon the carboniferous limestones and are, therefore, usually associated with coal measures. The coal beds of the Appalachian Range in North America, where millstone grits are 1,200 ft. thick, are important. The rock is valuable for building purposes, and in the manufacture of grindstones.

Millville. City of New Jersey, U.S.A., in Cumberland co. It is on the Maurice river, at the head of navigation, 40 m. S.S.E. of Philadelphia, and is served by the Pennsylvania rly. and by inter-urban electric services. Millville was incorporated in 1801 and became a city in 1866. Pop. 14,700.

Millwall. District of London. It is in the Isle of Dogs, forms the S.W. part of the met. bor. of Poplar, and has Limehouse Reach on the W., Cubitt Town E., the West India Docks N., and Millwall Dock S. The last named has an area of 233½ acres, 35½ acres of which are covered with water. The entrance lock in Limehouse Reach is 450 ft. long, 80 ft. wide, and 28 ft. deep at high-water spring tides. Vessels up to 9,000 tons are accommodated. General trade is done with vessels from the Baltic, N. and S. Europe, and N. and S. America. About one-third of the grain brought to the port of London is discharged here. The central granary is 250 ft. long by 100 ft. wide, has 13 floors, a floor storage area of 7 acres, and accommodation for about 120,000 qrs. There is powerful pneumatic machinery for discharging the grain. The name is derived from seven windmills, which stood on the wall built here to keep the Thames from overflowing at high tide.

Milman, HENRY HART (1791-1868). British historian and divine. Born in London, Nov. 10, 1791, the son of the court physician, Sir Francis Milman, Bart., he was educated at Eton and Brasenose College, Oxford. He won the Newdigate prize, became fellow of Brasenose, and was ordained in

1816, holding for a short time a living at Reading. From 1821-30 he was professor of poetry at Oxford. In 1835 he was appointed canon of Westminster and

rector of S. Margaret's, and in 1849 he became dean of S. Paul's, a position which he held until his death near Ascot, Sept. 24, 1868.

Milman's first essay in literature was a drama, *Fazio*, 1815, followed by dramatic poems; *Samor*, 1818; *The Fall of Jerusalem*, 1820; *The Martyr of Antioch*, 1822; and *Belshazzar*, 1822. As an historian he wrote a *History of the Jews*, 1829, which gave offence by his treatment of Jewish history from the secular point of view. He wrote a *History of Christianity under the Empire*, 1840, but his great work was his *History of Latin Christianity*, 1854-56. He edited what was long the standard edition of the *Decline and Fall*, and wrote a *Life of Gibbon*, 1839. He is also known by several hymns, notably *When our heads are bow'd with woe*. See *Life*, A. Milman, 1900.

Milne, SIR ARCHIBALD BERKELEY (b. 1855). British sailor. Born June 2, 1855, son of Admiral of the Fleet Sir Alexander Milne, Bart., he entered the navy in 1869. He was attached to the naval brigade in the Zulu War, 1878-79, being present at the battle of Ulundi, when he was wounded, served in the Egyptian campaign, 1882, and from 1889 to 1905 was in command of King Edward VII's yachts, including the period when he was prince of Wales. Second in command Atlantic Fleet, 1905-6, and commander of the 2nd division, Home Fleet, 1908-10, he was commander-in-chief in the Mediterranean, June, 1912-Aug., 1914, and while so employed the Great War broke out.

Milne was much criticised by the public in connexion with the escape of the cruisers *Goeben* and *Breslau* Aug. 6, 1914, but the admiralty exonerated him from blame, and intimated "that the general dispositions and measures taken by him were fully approved." He became commander-in-chief at the Nore, Aug. 29, 1914, and was placed on the retired list in Feb., 1919. Rear-admiral 1904, and vice-admiral 1908, he was promoted admiral in 1911. He was made K.C.V.O. 1904, having already succeeded his father as second baronet in 1896, and was created G.C.V.O. in 1912. See *Breslau*; *Troubridge*, E. C. T.

Milne, SIR GEORGE FRANCIS (b. 1866). British soldier. Born Nov. 5, 1866, he entered the Royal Artillery in 1885, and first saw active

service in the Sudan in 1898, being present at the capture of Khartum. In South Africa, where he was on the staff, he won the D.S.O., and returning home held a succession of staff appointments. In 1913 he was placed in charge of the artillery of the 4th division, and he took that unit to France in Aug., 1914.

In Jan. 1915, he was chosen to command an infantry brigade and in February a division. For some months he was chief staff officer to the Second Army, but at the end of the year he was sent to Salonica.



Sir G. F. Milne,
British soldier
Russell

and in May, 1916, took command of the British contingent there. Under the supreme direction of the French commander-in-chief, Milne was responsible for the defensive operations against the Bulgarians in 1917, and in 1918 for the offensive ones that ended with Bulgaria's capitulation. He then commanded the army of the Black Sea, retiring in Sept., 1920. In 1923 he was given the Eastern command (England). Milne was made a lieutenant-general in 1917, was knighted in 1918, and in 1920 became a full general.

Milne, JOHN (1850-1913). British seismologist and mining engineer. Born at Liverpool and educated at the Royal School of Mines in London, he worked for some years as a mining engineer in Labrador and Newfoundland. Appointed geologist and mining engineer to the Japanese government, a post he held for twenty years, he established the seismic survey of that country, and afterwards a seismic survey of the world for the British Association. He was one of the pioneers of the systematic study of earthquakes, and invented a large number of instruments for recording shocks. He published numerous books on the subject, among which are *Earthquakes and other Earth Movements*, 1883; *Seismology*, 1898; as well as contributing a large number of papers to scientific journals on seismology, geology, mining, and mineralogy. He died July 31, 1913.



John Milne,
British seismologist
Elliott & Fry



H. H. Milman,
British historian

Milne-Edwards, HENRI (1800-85). French naturalist. Born in Bruges, Oct. 23, 1800, the son of an Englishman, he qualified as a doctor, but devoted himself to science, especially zoology of the invertebrates. After teaching for some years in the Collège



H. Milne-Edwards, French naturalist

Henri IV at Paris, he succeeded Cuvier in the Académie des Sciences, and in 1841 became professor of entomology and in 1844 professor of zoology and physiology at the Museum of Natural History in the Jardin des Plantes. He died July 29, 1885.

Milner, ALFRED MILNER, 1ST VISCOUNT (b. 1854). British administrator and statesman. Born of



English parents at Bonn, March 23, 1854, he was educated in Germany, at King's College, London, and Balliol College, Oxford, where he had an exceptionally brilliant career, ending with a fellow-

ship at New College. He became a barrister, but for a time was on the staff of The Pall Mall Gazette.

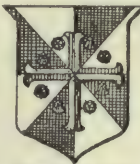
Milner contested the Harrow division of Middlesex in the Liberal interest at the general election of 1885, but without success, and his public career really began with the post of private secretary to G. J. Goschen. This led to his appointment as under-secretary for finance in Egypt, 1889-92, and chairman of the board of inland revenue, 1892-97. He was created K.C.B. in 1895, and in 1897 was sent to South Africa as governor of the Cape of Good Hope, and conducted the negotiations with Kruger before the South African War. He remained at his post during the struggle, took part in the peace negotiations, and afterwards was governor of the Transvaal and Orange River Colonies until 1905.

Conscious possibly of the hostility he had aroused in Great Britain, Milner, who had been made a baron in 1901 and a viscount in 1902, remained in retirement for some years, although he emerged to denounce the budget of 1909. However, in 1916, his former oppo-

nent, Lloyd George, chose him as one of the members of the small War Cabinet, and for two years the two worked together closely in planning the final victory of the Allies. After the armistice Milner was appointed secretary for war. He was colonial secretary, 1919-21, during which period he headed a special mission to Egypt.

Although possessed of high administrative gifts, a certain reserve, sometimes called hardness, prevented Milner from ever becoming a popular figure. He was accused of being a bureaucrat of the Prussian type, while with equal unreason he was regarded as opposed to progress of all kinds. His writings include *England in Egypt*, 1892. See *Egypt*; *South Africa*; consult also *Milner and S. Africa*, E. B. Iwan-Müller, 1902; *Lord Milner's Work in S. Africa*, 1902; and *Reconstruction of the New Colonies under Lord Milner*, W. B. Worsfold, 1913.

Milngavie. Town of Dumbar-tonshire, Scotland. It stands on Allander Water, 6 m. N.N.W. of Glasgow on the N.B. Rly. The industries include calico printing and bleaching. Pop. 4,500. Popularly pronounced Millguy.



Milngavie arms

Milnrow. Urban dist. of Lancashire. It is 2 m. from Rochdale, with a station on the L. & Y. Rly. John Collier, known as Tim Bobbin, the dialect poet, was a school-master here. There are coal mines in the neighbourhood. Pop. 8,600.

Milo or **MELOS**, Island of Greece, the most south-westerly of the Cyclades (*q.v.*). It is 14 m. in length by 8 m. wide, having an area of 60 sq. m. Of volcanic origin, it rises in Mt. St. Elias to 2,540 ft. A long inlet opening on the N.W. affords one of the best natural harbours in the Levant. The soil is fertile, yielding cereals; sulphur, gypsum, etc., are found. Plaka, the capital, stands on the N.E. shore of the inlet. Port Milo is situated near the site of ancient Melos. Here were the statue of Poseidon, now in the Athens Museum, the Asclepius, in the British Museum, the Venus de Milo, in the Louvre, Paris, and other works of ancient art. In the prehistoric settlements at Phylakopi, much early pottery and some paintings were excavated. Milo was colonised successively by the Phoenicians and Dorians, and fell to the Athenians in 416 B.C. The Turks took possession of the island in 1537. Pop. 5,000. *Pron.* Meelo.

Milo. Famous athlete of ancient times, belonging to Crotona, S. Italy. He gained many victories at

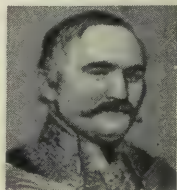


Milo. Sculpture by P. Puget, representing the death of the athlete
Louvre, Paris

the Olympic and other games, and is said on one occasion to have carried a heifer on his shoulders through the stadium at Olympia, and eaten it in one day. In 511 B.C. he was general of the army which defeated the Sybarites. It is said that in his old age, while endeavouring to rend a split trunk, his hand was trapped, and being unable to get away, he fell a victim to wolves. *Pron.* Mylo.

Milo, **TITUS ANNIUS** (d. 48 B.C.). Roman politician. A member of the aristocratic party, he was largely responsible, as tribune of the plebs, for securing the return of Cicero from exile, 57 B.C. This brought him into conflict with Clodius. Both were in the habit of going about Rome attended by bands of armed gladiators, and the two bands meeting on one occasion on the Appian Way, Clodius was killed, 52 B.C. Arraigned for the murder, Milo was defended by Cicero, but a tumult arose, Cicero was intimidated and did not deliver his speech, and Milo was condemned and went into exile. Milo afterwards led a band of insurgents in S. Italy and was slain near Thurii.

Milosh Obrenovich (1780-1860). Prince of Serbia. Of peasant birth, he was employed in the cattle trade by his half-brother,



Milosh Obrenovich, Serbian prince

Milan Obrenovich, who was already known as a patriot. Milosh, whose real name was Theodorovich, took his brother's surname, and as Milosh Obrenovich soon gained a name in the rising against the Turks headed by Karageorge (*q.v.*). In 1813 the Turkish campaign to re-establish order drove Karageorge and his leaders to take refuge in Austria, but Milosh remained in Serbia, made his peace with the Turks, and was appointed voivode of Rudnik. In 1815 he raised his standard against the Turks, drove or bought them out of the country, and two years later was elected prince of Serbia, under the suzerainty of Turkey. The next twenty years were spent in developing and establishing order in the country. But in 1839 Russia, who had viewed with disapproval Milosh's independent spirit and friendliness with Britain, fomented an agitation which forced him to abdicate, and he lived in retirement until 1858, when, on the expulsion of Alexander Karageorge, he was again given the throne. He died Sept. 24, 1860. *See* Belgrade.

Milreis OR MILREAS (Port. *milreis*, a thousand reis). Obsolete Portuguese gold coin nominally worth 4s. 5d. It has been superseded by the escudo (*q.v.*). The Brazilian milreis is a gold coin worth nominally 2s. 3d., but it is not generally circulated, being replaced by the silver coin of the same name which fluctuates in value.

Miltiades. Athenian soldier. A son of Cimon (*q.v.*), he succeeded his brother Stesagoras as tyrant of the Thracian Chersonese.



Miltiades,
Athenian soldier

When Darius I of Persia made his expedition into Scythia, and his return was overdue, Miltiades and other Greeks who had been left behind to guard the bridge over the Danube, recommended that the bridge should be destroyed, but their counsel was overruled. The truth of this story, related in Herodotus, has been called in question. Miltiades subsequently incurred the hostility of Darius by his conquest of Lemnos and Imbros, which were subject to Persia, and when Darius determined upon war with Greece, Miltiades sought refuge in Athens.

He was chosen one of the ten generals, and when, before the battle of Marathon, opinions were divided as to the advisability of immediate attack, the bold policy of Miltiades carried the day. Under

his charge the Greeks gained their memorable victory, 490 B.C. (*See* Marathon.) Entrusted subsequently with a force of 70 ships to carry on the war against the Persians, Miltiades attacked the island of Paros to satisfy a private feud, but failed, and was wounded. Indicted for deceiving the people, he was condemned to pay a fine of 50 talents (about £12,000), and, being unable to pay, was thrown into prison, where he died. *Pron.* Mil-ti-adeez.

Milton. Urban dist. and market town of Kent, in full Milton-next-Sittingbourne or Milton Regis. It stands on Milton creek, an opening of the Swale, 10 m. from Chatham, having with Sittingbourne a station on the S.E. and C. Rly. Paper is made here, and the place is noted for its oysters. Milton forms practically one town with Sittingbourne. Market day, Fri. Pop. 7,500.

There are many other places of this name in Great Britain. One is part of Portsmouth and another part of Gravesend. Milton, on



Milreis. Obverse and reverse of obsolete Portuguese gold coin; $\frac{1}{2}$ actual size

Christchurch Bay, 6 m. from Lymington, is a small watering-place. Milton House, near Peterborough, is the seat of Earl Fitzwilliam. Great and Little Milton are in Oxfordshire.

Milton. Town of Massachusetts, U.S.A., in Norfolk co. On the Neponset river, 7 m. S. of Boston, it is served by the New York, New Haven and Hartford Rly. A residential suburb of Boston, it includes the villages of Lower Mills, Mattapan, and East Milton, and is attractively situated in the Blue Hills, on whose highest summit, 635 ft., is an observatory. There are granite quarries and chocolate manufactories. Settled in 1637, it was incorporated as a separate township in 1662. Pop. 9,400.

Milton. Town of Pennsylvania, U.S.A., in Northumberland co. On the Susquehanna river, 60 m. N. of Harrisburg, it is served by the Philadelphia and Reading and the Pennsylvania rlys., and the Pennsylvania canal. It trades in agricultural produce and manufactures boots and shoes, knitted goods, saw mill products, and flour. Settled about 1770, Milton was incorporated in 1817. Pop. 8,600.

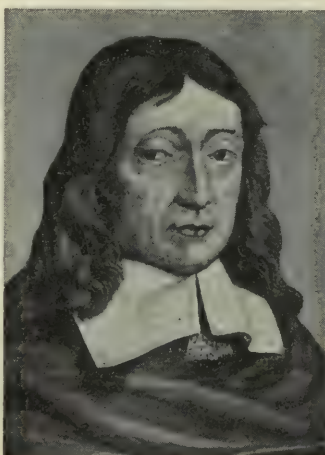
Milton, JOHN (1608-74). English poet and prose-writer. He was born in Bread Street, Cheapside, London, Dec. 9, 1608. His father, a scrivener, was Puritan in sympathy, but a lover of literature and music, and the child enjoyed all the advantages of a cultivated home. Educated at St. Paul's School and at Christ's College, Cambridge, on leaving the university he retired to his father's country house at Horton, Buckinghamshire. There he spent six years, 1632-38, in arduous study, and wrote, among other things, the exquisite companion idylle, *L'Allegro* and *Il Penseroso*, 1633; the masque *Comus*, 1634; and *Lycidas*, 1637, an elegy on the death of his college friend, Edward King, which apart from its beauty is important because in it he, for the first time, openly proclaimed his adherence to the Puritan cause.

In May, 1638, he set out for the Continent, intending to spend at least three years abroad. But at Naples news reached him of civil commotion at home, and thinking it "base to be travelling for amusement" while his "fellow-citizens were fighting for liberty," he abandoned his projected tour in Greece and returned to England, Aug., 1639, to find the country on the verge of civil war. He was already meditating a great epic poem, but, laying this aside, he devoted himself for the next 20 years almost entirely to politics and prose. His *Doctrine and Discipline of Divorce* appeared in 1643-45; his *Tractate on Education* in 1644, in the same year as his splendid vindication of the liberty of the press, *Areopagitica*. Immediately after the execution of Charles I he published his *Tenure of Kings and Magistrates*, which at once established his position as the most eloquent apologist of the new régime, and he was appointed Latin secretary to the committee for foreign affairs. As a publicist he continued to render assistance to the Government by his *Eikonoklastes*, 1649; his *Defensio pro Populo Anglicano*, 1651; and his *Defensio Secunda*, 1654.

While he was engaged on the last-named work his eyes, always weak, failed entirely and he became totally blind. Meanwhile his domestic life had been unfortunate. In 1643 he had married Mary Powell, the daughter of an Oxfordshire royalist, but the union was an unhappy one. His wife died in 1653, and in 1656 he married Catherine Woodcock, who died in 1658. Two years later he was involved in the disaster of the Restoration, which drove him into

obscurity and left him an impoverished man. In his loneliness and sorrow he now turned to the poetic work which he had planned so many years before. *Paradise Lost*, "the epic of a lost cause," was published in 1667; *Paradise Regained* and *Samson Agonistes* in 1671. The principal prose works of these last years were a *History of Britain*, 1670; and a treatise *Of True Religion*, 1673. In 1663 he took as his third wife Elizabeth Minshull, whose affectionate care was some compensation for the undutiful conduct of the three daughters of his first marriage. Milton died in his house in Artillery Walk, Bunhill Fields, London, Nov. 8, 1674, and was buried in S. Giles's, Cripplegate. His widow survived him until 1727.

Milton has been described as "not only the highest, but the completest type of Puritanism," but while this may be true in respect of his personal character, as a poet he far transcended the limitations of his sect, for with the Puritan's zeal for righteousness he combined the scholar's love of knowledge and the artist's devotion to beauty. He was indeed a child of the Renaissance; his genius was inspired and enriched by its classic culture; and in form



Joannes Miltonius (John Milton)

After W. Faithorne

But while Milton's art and learning connect him with the Renaissance they are turned by him to the service of a Puritan philosophy of life; as notably in *Paradise Lost*, which, technically the finest example of the classic epic in modern European literature, has as its avowed purpose "to justify the ways of God to men." His supremacy among



Milton Abbey, Dorsetshire. The abbey church, restored in 1865, and the mansion erected on the site of the old monastic buildings

By courtesy of Country Life

his work belongs to the great Renaissance tradition; for Comus is a masque of the kind which Italian influences had made popular in the aristocratic circles of the time; *Lycidas*, a pastoral elegy in the manner of Theocritus and Bion; *Paradise Lost*, an epic fashioned closely on the models of Greek and Latin antiquity; *Samson Agonistes*, a tragedy of the severe Attic type.

English poets is beyond dispute; in intellect, imagination, and creative and constructive power he is without a rival; he is our greatest master of sublimity and the "grand style"; and if his Puritanism often makes him harsh and narrow, in loftiness of moral spirit he is still unsurpassed. See Chalfont St. Giles; English Language and Literature; *Paradise Lost*.

W. H. Hudson

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Milton Abbey. Name of a mansion and a church in Dorsetshire, England. Situated about 7 m. from Blandford, the mansion occupies the site of a 10th century Benedictine abbey and of the ancient town of Milton or Middleton. In 1752 the property was bought by Joseph Damer, later earl of Dorchester, who destroyed the town, transferring the inhabitants to the present Milton Abbas, pulled down the monastic buildings, except the abbey church and the monks' refectory, a large hall with a roof of Irish oak, and built the existing mansion in 1771 on the site of the abbey, from designs by Sir W. Chambers. The old town had a grammar school, at which Masterman Hardy, Nelson's captain, was a scholar.

The abbey church is a superb 12th-14th century structure, with Perpendicular tower, flying buttresses, and many beautiful windows. It has a 15th century altar screen, an oak tabernacle, and some ancient paintings and fine sculptures. Milton Abbey is the Middleton Abbey of Thomas Hardy's *The Woodlanders*. On an eminence near by is the little Norman chapel of S. Catherine, now restored as a place of worship.

Milvian Bridge, BATTLE OF THE. Fought Oct. 27, A.D. 312, at the bridge of that name, sometimes called the Mulvian Bridge, across the Tiber, between the forces of Constantine and those of Maxentius. Some time before the battle Constantine, it is said, had a vision, in which he saw in the sky the cross of Christianity, with the inscription: By this conquer. There is no reliable evidence as to the date when Constantine resolved to adopt a liberal policy towards Christianity, but it is certain that in the battle his soldiery fought with the Christian monogram as their badge. The battle resulted in the complete defeat of Maxentius, who himself was drowned in the Tiber. Constantine thus became master of the Western empire, and was able to promulgate in his dominions the policy of toleration towards Christianity.

Milwaukee. City and port of entry of Wisconsin, U.S.A., the co. seat of Milwaukee co. The largest city of the state, it stands on the W. shore of Lake Michigan, 85 m. N. of Chicago, and is served by the Chicago and North-Western and

other rlys. The river Milwaukee and its tributaries, the Menominee and Kinnickinnic, which intersect the city, are navigable by large cargo and passenger ships, while an additional means of transport is afforded by the Great Lakes. The harbour, the finest on Lake Michigan, is protected by breakwaters. its wharves extend for more than 20 m., and there is ample warehouse accommodation. An important wholesale and distributing centre, Milwaukee trades largely in coal, lumber, flour, grain, and manufactured products. Its manufactures include steel, iron, and leather products, boots and shoes, machine-shop products, meal and packing-house products, clothing, electrical machinery and appliances, tobacco, beer, hosiery, and knitted goods.

Among Milwaukee's public buildings are the Federal building, the city hall, the county court, and records building. There are many fine churches, educational institutions, theatres, etc. Half the population is of German origin. Milwaukee, then an Indian town, was visited about 1760 by Alexander Henry. In 1838 it was incorporated as a village, and in 1846 was chartered as a city. Pop. 457,000.

Mimamsa (Skt., investigation). Indian philosophical system of the Vedas (*q.v.*). Divided into the Purva-Mimamsa and the Karma-Mimamsa, the foundation of the doctrine is attributed to the teacher Jaimini. The text consists of about 2,600 *sutras*, or short concise axioms, arranged under various heads and chapters, the whole forming a criticism and interpretation of the Veda doctrine, and touching many metaphysical and moral problems.

M.I.M.E. Abbreviation for Member of the Institution of Mining Engineers.

Mime or **MIMUS**. Old form of dramatic play in vogue among the Greeks and Romans. It was a farcical, and frequently coarse and indecent, representation of incidents of real life, given as a popular entertainment at particular festivals. The Latin mime was described by Scaliger as a poem imitating any action to stir up laughter; the Greek form was in prose.

The Greek mime originated in Sicily, its inventor being Sophron of Syracuse (c. 440 B.C.), who wrote in the Doric dialect. The Roman mimes were first put into literary shape by a Roman knight, D. Laberius (105-43 B.C.). He was forced by Julius Caesar to appear on the stage in one of his own characters, thereby losing his equestrian rank.



Milwaukee, Wisconsin, U.S.A. A general view of the city from the tower of the block of offices called the Pabst buildings

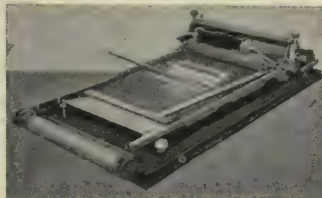
M.I.Mech.E. Abbreviation for Member of the Institution of Mechanical Engineers.

Mimeograph. Device for duplicating MSS., etc. Invented by Thomas Edison in 1878, it consists of a finely pointed steel stylus, which moves over the surface of a sheet of tissue paper that has been coated on one side with a film of sensitive material. The paper is placed on a steel plate cut in parallel lines numbering as many as 200 to the inch. The stylus moves over the steel plate, pressing down on the paper, and punctures the latter in sharp points. The punctured paper forms a stencil, which is inked, the ink being forced through

from the foliage upon which they fed, have long been known as curiosities of natural history. A few examples of unrelated insects resembling each other were well known also, but the likeness was regarded as being purely fortuitous except by teleologists, who assumed that the mimicking species had been specially created in that likeness in order that it might impose upon other creatures. The clear-wing moths and bee hawk-moths exhibited resemblances to hymenoptera or diptera sufficiently close to make them feared as stinging insects, and certain flies of the genus *Volucella* were thought to resemble wasps and bees, in order that they might enter the nests of these insects unchallenged and lay eggs there, the larvae being erroneously supposed to feed upon the grubs of bees and wasps.

When H. W. Bates was prosecuting his memorable researches in the Amazon country, he met with some astonishing examples of mimicry, and arrived at a workable theory to account for it. He found butterflies of the family Heliconinae strikingly marked on the wings with yellow and black—aposematic or warning colours. Other butterflies of the family Pierinae had their wings so altered in colour and shape from the family type that without the closest examination they would pass as the Heliconias.

Other species of Heliconinae were mimicked by butterflies of the swallow-tail and other families; also by day-flying moths. He found that the mimicked insects had offensive odours and taste, so that insectivorous birds, monkeys, and lizards refused them as food. They have a slow and peculiar flight, and make no effort to conceal themselves, as though conscious that nothing will molest them. Their wing markings are bold and distinctive, being unlike those of any



Mimeograph. Device for duplicating typewritten manuscripts

By courtesy of The Shannon, Ltd.

the perforations upon a sheet of paper underneath, and so producing a copy. The mimeograph has been improved and adapted for use with the ordinary typewriter, the type bars of the machine striking a sheet of paper laid against a piece of gauze and giving a similar effect to the original mimeograph when printed.

Mimicry. Act of mimicking or imitating. It is derived from the word mime, a mimic being one who imitates another. Naturalists use the term mimicry to cover several classes of protective coloration, found chiefly among animals. The remarkable resemblance between stick-insects and looper caterpillars, and the twigs upon which they rested, and the leaf-insects

other butterflies of that region—with the exception of the unrelated mimicking species. As A. R. Wallace has put it: "It is, therefore, clear that if any other butterflies in the same region, which are eatable and suffer great persecution from insectivorous animals, should come to resemble any of these uneatable species so closely as to be mistaken for them by their enemies, they will obtain thereby immunity from persecution. This is the obvious and sufficient reason why the imitation is useful, and therefore why it occurs in nature." Natural selection, by weeding out the least like, is always tending to the perfection of the resemblance. The mimicked species is always more numerous in individuals than its imitators. Wallace added further examples from his experiences in Malaya, and Trimen from his among the butterflies of S. Africa.

The same principle prevails in other orders of insect life. Inedible beetles that are warningly coloured are mimicked by other beetles that are perfectly palatable, and moths imitate protected wasps, sawflies, and unpalatable beetles so closely that entomologists trained to look for such counterfeit resemblances are frequently deceived. A few desert plants escape destruction by herbivorous animals by resembling stones.

Another class of mimicry is quite commonly displayed by moths whose wing-markings are such that when the moth settles upon tree-trunk or rock its colour-scheme melts, as it were, into the immediate surroundings; and the insect becomes invisible; in other cases they resemble dead or living leaves or twigs. *See Bird; Darwinism; Insect; Protective Colouring; consult also Darwinism, A. R. Wallace, 1889; Colours in Animals, E. A. Poulton, 2nd. ed. 1890; A Naturalist on Lake Victoria, G. D. H. Carpenter, 1920.*

Mimir. In Norse mythology, guardian of the fountain of wisdom in the lower world. Odin purchased a draught from the fountain with one of his eyes, and thus was enabled to spread wisdom among men. Mimir was a hostage given by the Aesir to the Vanir, who beheaded him; but Odin uttered spells over the head that it might still advise him.

Mimnermus (fl. c. 620 B.C.). Greek lyric poet. A native of Smyrna, he was the first to use elegiac verse regularly for the themes of love and lament. Fragments only of his work survive.

Mimosa. Large genus of herbs, shrubs, and trees of the natural order Leguminosae, chiefly natives

of America. The leaves are twice divided into small leaflets, and are often sensitive, folding up at a touch, or under atmospheric changes. The small yellow flowers are closely packed in round heads



Mimosa. Spray of flowers and foliage of the American shrub

or cylindrical spikes. The mimosas are frequently confused with the Australian wattles (*Acacia*), but no species of mimosa is a native of Australia.

Mimulus. Genus of annual and perennial herbs of the natural order Scrophulariaceae. The musk (*q.v.*)



Mimulus. Leaves and flowers of musk, *Mimulus moschatus*

is the best-known species. They are natives of America, Asia, E. Africa, and Australia, and were introduced into Britain in 1826. *See Monkey-flower.*

Min. Egyptian deity. Perhaps introduced from Punt, he was the god of fields and the desert routes, especially worshipped at Coptos and at Akhmim, whose Greek name Panopolis is due to his identification with Pan. Petrie's Coptos excavations, 1894, revealed three limestone colossi of the god, the oldest Egyptian statuary. In the XIXth dynasty Min was absorbed by Ammon, and portrayed as a tightly swathed man with the double plume, his right arm holding a flail. *See Egypt.*

Min. Name of two rivers in China. One is a tributary on the left bank of the Yang-tse, which it

joins near Suifu. It rises in the N. of Szechuan prov. at an elevation of 13,000 ft., and is navigable for 200 m. The other river is in Fukien prov. Including the longest of its three headstreams, it is 350 m. in length. Foochow is situated on it. Owing to the bar at the mouth, large ships can only enter the river at high tide. *See China; Foochow.*

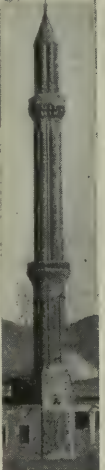
Mina. Ancient Greek weight and money of account, varying in Asia Minor and different parts of Greece. Though not coined, the money of account equalled one-sixtieth of a talent and was worth between £3 and £4.

Mina or **MYNAH** (*Gracula religiosa*). Passerine bird of Southern India. About the size of the English blackbird, glossy black in colour, with purple, violet, and green iridescence, it has a white patch on the quill feathers of the wings, a curved orange bill, yellow legs, and behind the eye a naked, fleshy yellow excrescence which joins the top of the head. There is also a bare patch below the eye. They are described as fruit-eaters, but are very familiar from their habit of visiting verandahs for the purpose of feeding upon the insects that shelter there. They are easily tamed, and in addition to their natural whistling capabilities can be taught to pronounce words quite distinctly.

Minaret. Term used for a slender tower of moderate height, with one or more balconies, from which Mahomedan priests summon the people to prayer at certain stated hours. *See Mahomedan Architecture.*

Minas. Town of Uruguay, capital of the dept. of Minas. It is 70 m. direct and about 80 m. by rly. N.N.E. of Montevideo. In the vicinity are marble and granite quarries. Founded in 1784, it has a pop. of 9,000. Minas dept., in the S.E. of the republic, has an area of 4,819 sq. m. Stock-raising and the cultivation of cereals are the chief occupations. Pop. 64,400.

Minas Geraes. Inland state of S.E. Brazil. It is bounded N. by Bahia and S. by Rio de Janeiro. The most populous and the fifth largest state of Brazil, it is watered by the São Francisco, the Parahyba, their tributaries, and many other rivers. Mainly a



Minaret or tower of Mahomedan mosque

forested plateau, with an alt. of 2,000 ft., it is traversed by the Sierra do Mantiqueira and the Sierra do Espinhaço, and contains Mt. Itatiaia. Manganese, gold, diamonds, and other precious stones, coal and iron are found, but not extensively worked. The chief industries are stock-raising and agriculture. The principal products are coffee, beans, sugar, tobacco, cotton, rice, potatoes, cheese, and butter. Ouro Preto was the capital until 1887, when it was supplanted by Belo Horizonte. Area 221,951 sq. m. Pop. 4,628,600, including several thousand Botocudo Indians.

Minbu. Dist. and river port of Burma, on the Irawadi. The dist. lies between the Irawadi and the Arakan Mts. Rice and oil seeds are the chief crops. The port is on the right bank, almost opposite Magwe in the lower section of the river, where there is no rly. Dist., area 3,302 sq. m. Pop. 264,000. Town, pop. 5,500.

Minch. Name for parts of the channel E. of the Outer Hebrides, Scotland. It consists of the Minch and the Little Minch. In the N. the Minch varies from 20 to 45 m. in width; the Little Minch, W. of Skye, is narrower, being from 15 to 20 m. wide. Like the Red Sea, and Glen More in Inverness, the channel is a rift valley.

Minchinhampton. Town of Gloucestershire, England. It is 4 m. from Stroud, near the Thames and Severn canal. The chief industry is the making of woollens, and there is a golf course. The chief church is Holy Trinity, dating in part from the 13th century. From Minchinhampton Common, 660 ft. high, a fine view of the Cotswolds is obtained. The town has long been famous for its manufacture of cloth, and in former days brewing was an industry. Pop. 3,200.

Mincing Lane. London thoroughfare. Between Rood Lane and Mark Lane, it connects Great Tower Street with Fenchurch Street, E.C., and is a centre of the tea and rubber trades. Here is the hall of the Clothworkers' Company (*q.v.*), the garden of which, containing the tower of the old church of All Hallows Staining, is formed from the churchyard of that building. The body of the church was demolished in 1870, when its monuments were removed to St. Olave's, Hart Street. The lane is named after houses which belonged to the *mynchens*, or nuns, of St. Helen's.

Mincio. River of N. Italy. Issuing from the S. end of Lake Garda, it flows S. and S.E., joining the Po 10 m. S.E. of Mantua, up to

which it is navigable, after a course of 116 m. Near its banks several battles were fought: Castiglione, 1796; Solferino, 1859; and Custoza, 1848 and 1866. *Pron.* Meenchyo.

Mind. In general, the opposite of matter, more particularly, the thinking part of us, the cognitive faculty which is mainly concerned with intellectual processes. In this sense it is contrasted with soul (*q.v.*), which is mainly concerned with the various forms of feeling, volition, and emotion. The word *nous* (mind), as used by the Greek philosopher Anaxagoras in the sense of the arranging principle of the world, involved the idea of consciousness and design. The same idea appears to some extent in the monads of Leibniz. According to the modern definition, mind is a collective term, denoting the sum-total of all our mental processes, which are themselves only different functions of the nervous system, especially of the brain.

In regard to the relation between mind and body (matter), there are three principal hypotheses. Dualism (*q.v.*) regards the mind as a substance existing side by side with, and independently of, the body. Its supporters argue that the essential characteristics of matter are extension, change, and movement in space, and that it has never been shown how mental phenomena, the characteristics of which are unity and identity, can be produced from movement and change.

Materialism (*q.v.*) regards mental phenomena as mere bodily functions, like the digestion of food. But it is difficult to see how thought (consciousness) can be reduced merely to this, for the movements which take place in our body remain unconscious as far as we are concerned, whereas we ourselves are conscious of our thoughts. The most we can say is that thought is no doubt connected with certain functional movements of the brain which are necessary to it under present conditions; but, though connected with these functions, it is yet distinct from them. The materialist, however, argues that it is difficult to conceive a satisfactory positive notion of an intellectual substance, not merely regarding it as the negative of body. Idealism (*q.v.*) sees in bodies and external phenomena only the manifestations of intellectual beings; mind is the reality, all else is derived from it, or is mere appearance.

The object of mental philosophy is to arrive at a unitary conception of the aggregate of mental phenomena; but whereas the individualistic theory assumes a

plurality of independent intellectual parts, by the cooperation of which a unity of the intellectual life of the world is produced, universalism regards this unity as prior in time, and the different intellectual phenomena as manifestations of a universal world spirit.

Mindanao. Second in importance and size of the Philippine Islands. Irregularly shaped, with a long peninsula stretching out to the W., its main portion measures about 300 m. from N. to S., and 150 m. from E. to W., while it has an area of 36,290 sq. m., excluding dependent islands. It is almost cut into two parts by the bays of Iligan on the N., and Illana on the S. of the peninsula, and its shores are indented by many other bays.

The surface is in general very mountainous, the loftiest summits being the active volcanoes of Apo, 10,312 ft., and Malindang, 8,562 ft. Most of the rivers are small, but the Agusan and the Rio Grande de Mindanao traverse the greater part of the island. Lakes are numerous. The climate is hot, and the rainfall heavy, the annual fall often exceeding 100 ins. The island is subject to earthquakes, a disastrous visitation in 1897 causing much damage, including the destruction of the town of Zamboanga, since rebuilt. Hemp and copra are the chief products. Timber is largely obtained, minerals are worked to some extent, and cattle rearing is carried on. The inhabitants, who number 510,000, are mostly of Malay stock, about one-third being Christians, and the majority of the remainder Mahomedans.

Minden. City of Westphalia, Germany. It stands on both sides of the Weser, 44 m. from Hanover.



Minden arms

The cathedral, begun in the 11th century, the tower being the oldest portion, has some priceless works of art in its treasury. Other old buildings are St. Martin's church and the town hall, and there are a number of modern ones. The industries include the manufacture of textiles, beer, tobacco, soap, chemicals, etc., and the building of boats. Made the seat of a bishop in the 8th century, Minden was a prosperous commercial town in the Middle Ages, when it was fortified, and a member of the Hanseatic League. Pop. 26,500.

The bishop of Minden was one of the great ecclesiastics of Germany. He ruled over an area of about 400 sq. m. around the city, and sat



Minden, Germany. South façade of the 11th century cathedral

among the German princes. In 1648 his principality was handed over to the elector of Brandenburg, and thus became part of Prussia.

Minden, BATTLE OF. Fought between the British and the French, Aug. 1, 1759. Under Ferdinand of Brunswick, a British and Hanoverian army was operating in N. Germany. Defeated at Bergen in April, it fell back before the French, who occupied Minden in July. To retire farther would have been to leave Hanover to the mercy of the French, so Ferdinand decided to fight.

The French army, 60,000 strong, commanded by Contades, occupied a strong position to the S. of Minden, the Weser protecting one flank, and a morass the other. The British and their German allies had 52,000 men, and the engagement began when 7,000 of them were sent to cut the enemy's communications with Kassel. The French met this threat by ordering a general attack, which was anticipated by Ferdinand, who moved more troops into the threatened position, while six English, followed by three Hanoverian, battalions advanced to the attack.

In two lines they marched steadily across the plain, swept by a cross-fire from both flanks, until they were charged by the French cavalry, which they routed with a most destructive fire at close quarters. The battle was won, and the French army fell back to Minden. Lord George Sackville refused to advance with his cavalry, thus enabling the French to retreat in fairly good order. The French lost 7,000, and many guns and colours. The allies lost 2,600, half being British, of whom about 10,000 were on the field. The six Minden regiments are 12th, Suffolk; 20th, Lancashire Fusiliers; 23rd, Royal Welch Fusiliers; 25th,

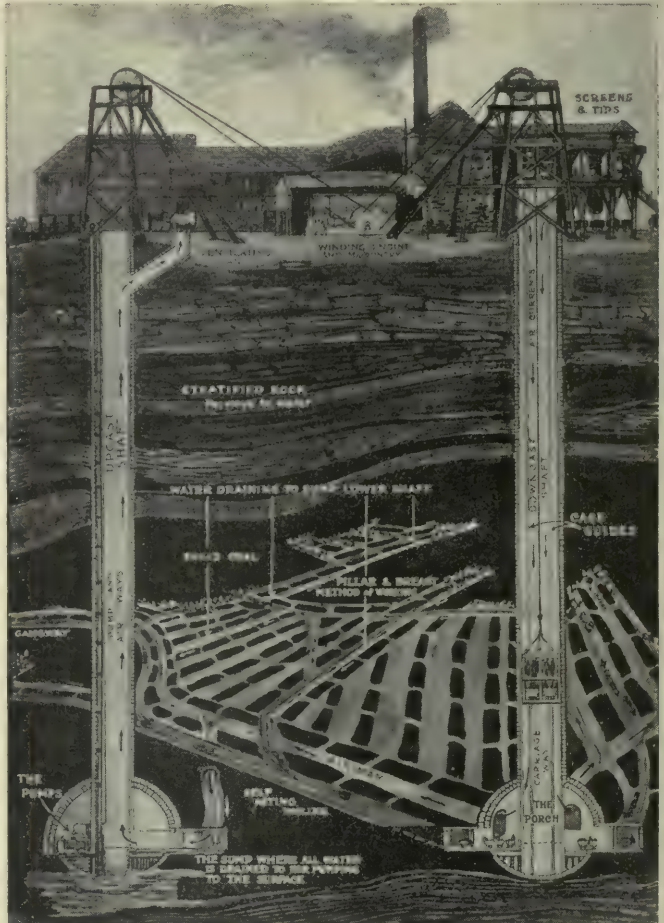
King's Own Scottish Borderers; 37th, Hampshire; and 51st, Yorkshire Light Infantry.

Mindoro. One of the Philippine Islands, ranking seventh in size. Situated S. of Luzon, from which it is separated by Verde Island Passage, 7 m. broad, it is 100 m. long by 60 m. broad, and covers an area of 3,850 sq. m., excluding several small dependent islands. Its surface is mountainous, rising in Mt. Halcon to about 8,850 ft., and extensively wooded. The rivers are short and commercially unimportant, and the coast is free from large indentations. Calapan is the capital. With the exception of savage tribes there are few inhabitants. Pop. 30,000.

Mine. Excavation made in the crust of the earth for the purpose of extracting some metallic or other mineral substance. A stone quarry and a clay pit are particular forms of mines. Also, broadly, as

petroleum is a mineral and the rights in it underground are included among mineral rights, an oil well is another particular form of mine. A sunk pit from which rock salt is extracted is obviously a mine, but so also in all essentials is a brine well.

A mine may be a mere scratching on the surface of the earth, e.g. a gold placer deposit on the bank or in the dry bed of a stream; an open working on the side of a hill, such as the hydraulic gold mines of California and Nevada, some of the iron mines in the Midlands of England and coal mines in Spitsbergen, and some other parts of the world; an immense underground series of caverns, as the salt mines of Wielicksza in Galicia, now part of Czecho-Slovakia; or a deep pit terminating in low workings, such as are the majority of the coal mines of the world. *See* Coal; Gold; Kimberley; Mining.



Mine. Pictorial diagram illustrating sectional view of the shafts of a coal mine, showing system of draining and pumping water, of ventilating the mine, and of working the tunnels

Mine. Charge of explosive in a case, used in naval, and sometimes in land, warfare. They were first employed by the Americans in 1776, but unsuccessfully. They were used in the Crimean War and the American Civil War, in which last struggle nine U.S. warships were destroyed and four damaged by them. In the Russo-Japanese War, 1904-5, they caused the loss of the Russian battleship *Petropavlosk* and the Japanese battleships *Hatsuse* and *Yashima*. In the Great War they were used on an enormous scale by both sides.

The German mines were metal cases containing from 50 to 450 lb. of high explosive, anchored on the bottom and moored to the anchor by a cable so adjusted that the mine automatically "took up" the intended depth, of from 20 to 30 ft. below the surface. The mines in a field were laid at distances of about 40 or 50 ft. apart. Detonation of the mine was caused by the ship's hull striking a horn in the mine. Mines of this type, laid by a German surface-ship, caused the loss of the *Audacious*, Oct. 27, 1914. Similar mines, laid by a German submarine, caused the loss of the *Hampshire*, June 5, 1916, and of numerous other British vessels, until the introduction of the paravane (*q.v.*) gave British vessels immunity against serious damage by this weapon.

In the British Navy the mines at the outset were defective, often failed to "take up" proper depth or to explode, and contained too small a charge. In the later period of the war they were transformed and so improved that they became most deadly, inflicting on the Germans a loss during 1917-18 of about 100 vessels in the Bight of Heligoland alone. Certain types of British and American mines were confidential, but they contained charges of 300 lb., and were fitted with "antennae," or thin cables of copper wire reaching to within a few feet of the surface, contact with which, even when the mine was laid very deep, produced instant explosion. There were other and even deadlier devices which remained official secrets. In Germany, the maximum output of mines was 2,000 per month; in Great Britain, a figure of 5,000 per month was reached in 1917; and in the U.S.A. at the close of the war the output was 1,000 per day. Barrages of mines were used extensively by the Allies in the later stage of the war to shut in the U boats. For destruction of submarines, mines require to be laid very deep.

Land mines were employed to some extent in the Great War

particularly for defence against tanks. They consisted of heavy charges of high explosives buried in the ground, and so arranged that the passage of a heavy weight over them would cause an explosion. In the attack on the Hindenburg Line, Sept. 29, 1918, ten American tanks were destroyed by passing over an old and forgotten tank mine-field. *See Explosives.*

Mine Field. Area of navigable water, strewn with mines to prevent the passage of vessels not provided with a plan of the safe channels. Mine fields may be laid to operate against surface vessels or against submarines submerged. Some of the mine fields laid during the Great War covered hundreds of square miles and contained tens of thousands of mines. For the protection of neutral shipping, the British admiralty from time to time published notices defining new mined areas. Thus in April, 1917, they announced that from April the dangerous area was 3 m. instead of 4 m. from the coast of Jutland. Similarly instead of an area extending to a point 7 m. from the coast of Holland, the new area included the limits of Netherlands territorial waters. The British-laid mine fields were chiefly in the North Sea, and in the area extending from the N. of Scotland to the territorial waters of Norway. *See Dogger Bank.*

Minehead. Urban dist. and market town of Somerset. It stands on the S. side of the Bristol Channel, 25 m. from Taunton, and 188 m. from London, with a station on the G. W. Rly. S. Michael's church is a fine 14th century building, with a beautiful



Minehead arms

rood loft and other features of interest. The older part of the town is built on the side of North Hill, a bold eminence which protects the lower and newer part. At

Quay Town, near the harbour, there are some old houses. Minehead is a popular watering-place, from which Exmoor, Lynton, and other beauty spots in Somerset and Devon can easily be reached. It was a flourishing port in the Middle Ages, and for a short time was a corporate town. From 1558 to 1832 it sent two members to Parliament, and it had fairs and markets. Market day, third Mon. Pop. 3,450.

Mine - laying. Operation in naval warfare. Submarine mines are of two classes: observation mines are used merely for local defence and detonated electrically when a ship is seen passing over the mined area; and contact mines which are anchored in minefields. The second Hague Convention forbade the setting adrift of contact mines, but the Germans ignored this prohibition in the Great War, and there is no method by which mines breaking adrift from their moorings, as they often will, can with certainty be made innocuous.

Mines can be laid by almost every class of vessel; converted cargo ships have been largely employed, and special mine-laying ships have been built. Two of the German cruisers which were brought to Scapa Flow after the armistice in 1918 had been specially fitted as mine-layers, and each carried about 360 mines. Italian scouting cruisers were provided with mine-laying equipment, and each carried about 100 mines. Caution is required in laying mines, but the safety gear has been brought to such perfection that few disasters occur.

The mine-layer is fitted with rotary gear, and an endless chain equipment, which engages mine after mine, each with its sinker and line, on the deck of the vessel, where they are drawn aft on trolleys along a special track, and dropped over the stern in succession. The operation is partly automatic, but skilled men are required to conduct the feeding of the mine-laying gear. Difficulties arise from strong currents, great rise and fall of

tide, heavy seas, bad weather, and the character of the bottom. This was the case in the Straits of Dover from 1914 onward, where the barrage was a combination of sub-surface mining and an intensive patrol. The activity of the U.S. mining service in the North Channel mine



Minehead, Somerset. Promenade and sands looking west

FRITH

barrage between Scotland and Norway illustrates what can be achieved. A new type of mine was used, reducing the number required and also cutting down by two-thirds the amount of wire rope necessary for anchoring the mines. In all, 56,570 mines were laid, being 80 p.c. of the total in those waters. On one occasion 5,520 mines were laid in 3 hours and 50 minutes.

Mine-laying by surface boats off the coast of an enemy is a risky operation. The Germans were the first to employ submarines specially built for this purpose. They began their operations in 1915. The earlier boats were small, very slow in operation, and crowded, but before the close of hostilities in November, 1918, more powerful boats were at work, each carrying a gun. The method of laying mines by submarines was altogether different from that employed in surface vessels. The mines were carried in pairs, one above the other, each pair being stowed in a special shoot or airlock. When the boat reached the scene of operations, by moving a lever she would release one mine, dropping it out from the bottom of the shoot with its sinker and line,

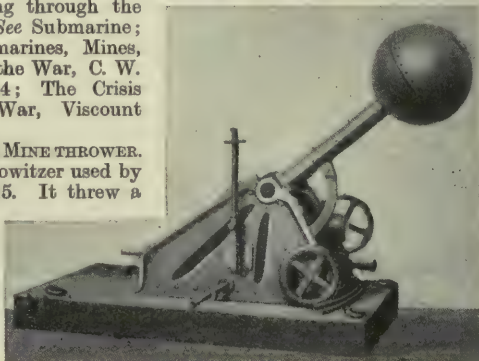
whereupon the upper mine descended into its place, ready for discharge in the same way. Water ballast was admitted to adjust the trim of the submarine, which was necessarily altered by the discharge of the mines. A number of British submarines of the "E" and "L" classes were fitted for mine-laying, the mines being loaded into vertical shoots passing through the external tanks. See Submarine; consult also Submarines, Mines, and Torpedoes in the War, C. W. Domville-Fife, 1914; The Crisis of the Naval War, Viscount Jellicoe, 1920.

Minenwerfer OR MINE THROWER. Species of trench howitzer used by the Germans in 1915. It threw a 200 lb. shell, about 3 ft. 9 ins. in length and 10 ins. in diameter, and large spherical bombs. See Howitzer.

Mineo (anc. *Menaenum*). Town of Sicily, in the prov. of Catania. Situated on a hill, 21 m. by rly. S.W. of Catania, it was founded by the Sicel leader Duceatius in the middle of the 5th cen-

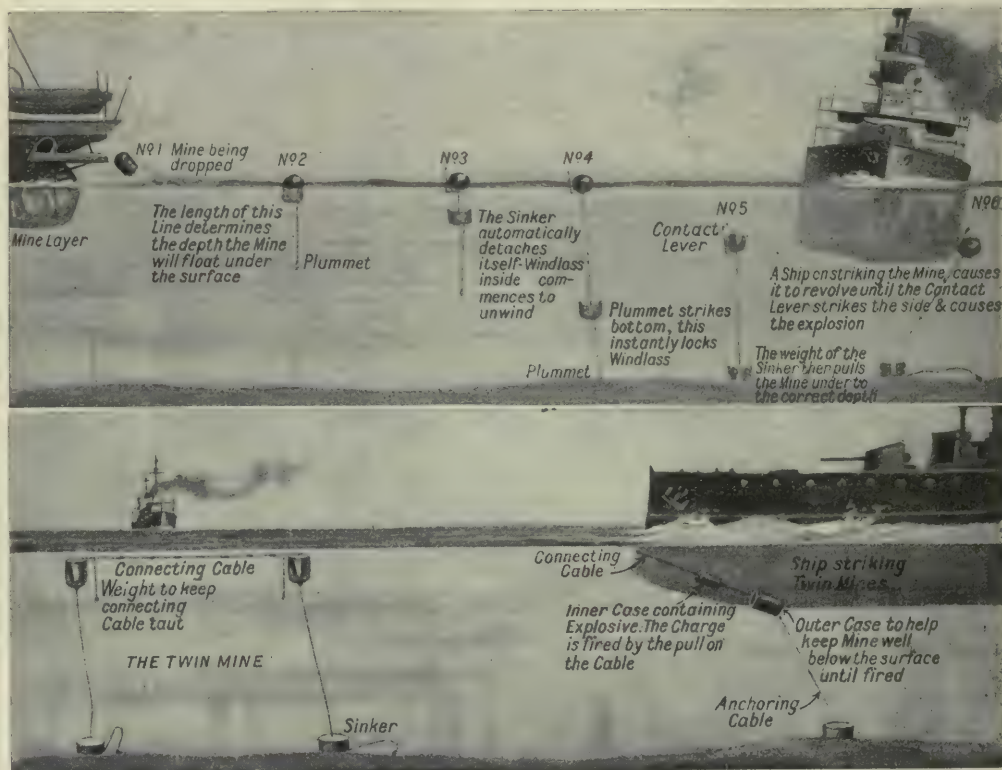
tury B.C. Near Lacus Palicorum was the temple of the Palici, revered as the holiest place in Sicily. Pop. 10,000.

Mineralogical Society. Society established for the study of mineralogy and kindred subjects. It was founded in 1876, and subsequently united with the Crystallogical Society. Meetings, at which papers



Minenwerfer. Type of German trench howitzer loaded with large bomb

are read, are held four times a year in the rooms of the Geological Society, Burlington House, London, W.



Mine-laying. Diagram illustrating operation of twin mines, which are exploded by pressure on the cable connecting them. Above, descriptive diagram showing how mines are held under the surface and exploded by a passing ship

MINERALOGY: SCIENCE OF MINERALS

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*This Encyclopedia has articles on all the important minerals, e.g.
Diamond; Gypsum; Iron, etc. See also Crystallography;
Geology; Rocks*

Mineralogy is the science of minerals, and a mineral may be strictly defined as an inorganic substance with a constant chemical composition, or a composition that varies only by the partial substitution of one element for another under recognized chemical laws. Under favourable conditions, a mineral assumes a characteristic crystalline form.

This phenomenon of crystallisation at once distinguishes a mineral from a rock, and excludes from scientific classification as minerals such substances as mineral oils, coal, and slate. Natural alloys are regarded as minerals, as also are the constituents of a mineral occurring in their proper proportions, but in an uncrystalline or amorphous state. Natural glass (obsidian) is not a mineral, since it contains the constituents of several species, which would have separated out from one another under suitable conditions.

The classification of minerals by older writers was hampered by the slow development of chemical science and methods of analysis, and the proper appreciation of minerals dates only from the last half of the 18th century. Mineralogy, however, is not merely a classificatory science, but one of immense philosophic interest. It is the natural history branch of chemistry. Since we receive only meteoritic substances from beyond the earth, even our organic compounds have those found in minerals as a basis. Radioactivity, moreover, with all the questions raised by it as to the succession of elements in time, is fundamentally concerned with minerals.

Chemical Examination

The most important character of minerals is undoubtedly chemical composition, and other characters depend very largely upon this. Since these characters are often more easily determinable than the composition, many minerals can now be identified without analysis. A qualitative chemical examination can, however, be made with ease in the case of common minerals, and especially of metallic ores, which often serves for identification, and the mineralogist or prospector who is an adept in the use of the blowpipe has here a notable advantage.

For quantitative work, the purity of a specimen is of the first im-

portance. Crystalline material is requisite, and, if possible, the work should be done on one or more actual crystals showing traces of external form. These can be scrutinised for possible inclusions, and here a polished surface of a thin section examined under the microscope is of service.

The results of analysis have in many cases been checked by synthesis, i.e. the production of the mineral artificially from known quantities of pure chemicals. In this way certain anomalies revealed by analysis have become ascribed to the solid solution of some substance in the others that determine the fundamental characters of the mineral. The excess of silica in natural nepheline when compared with the corresponding artificial sodium-aluminium or potassium-aluminium silicate, has been thus explained. The anomalous sulphur in pyrrhotine, mineral ferrous sulphide, provides another example.

Grouping of Molecules

The same chemical molecules, however, may group themselves variously under various conditions, and may produce a series of crystals which are not related to one another under the fundamental law of crystallography. Commonly this difference of structure is accompanied by a difference in specific gravity and in hardness. Two or even more distinct mineral species may thus possess the same chemical composition.

In cases of polymorphism, where the same substance appears in two forms (dimorphous), three forms (trimorphous), or even more, one form is usually far more commonly produced in nature. The predominance of calcite over aragonite, which is a good example, is further emphasised by the change of the latter mineral into the former in geological time.

It is clear that an amorphous mineral cannot be regarded as an independent mineral species. Separate names, however, must be assigned to amorphous materials, since we cannot speak, for example, of amorphous quartz, but only of amorphous silica.

One of the most beautiful results of the measurement of the angles of crystals (goniometry) is the discovery that differences of chemical constitution involve differences of crystalline form; while even the

substitution of one element for another to an extent that does not warrant the erection of a separate species, such as the substitution of calcium for sodium, in many feldspars, produces slight changes in the angles of forms that remain very similar in appearance. A number of minerals have been styled isomorphous on account of their close similarity in crystalline structure, which can commonly be traced in such cases to similarity in molecular structure.

Planes of Cleavage

The fact that many crystalline minerals possess regular planes along which they fracture, a property styled cleavage, is of great utility in determinative work. Quartz has no cleavage, breaking with a curving fracture like glass; other transparent and colourless minerals which show cleavage when struck cannot, then, be mistaken for this very common substance. Planes of cleavage, moreover, are related to the crystalline structure of the mineral. Where two or more series of such planes occur, the angles between them are angles which might be produced by the same substance in its external form. Hence, many fractured and imperfect specimens serve just as well as good crystals for purposes of measurement.

A broken mass of calcite, in the hands of the pioneer mineralogist Haüy, led to the recognition of the fundamental law of crystallisation in mineral species. The remarkable cleavage of mica, whereby it can be split into thin elastic sheets, is well known through its commercial applications.

Crystallographic studies are, however, for the laboratory. The hardness of a mineral, and, with the aid of very simple instruments, its specific gravity, can be readily determined in the camp. Hardness is roughly stated by comparison with that of certain well-known minerals. This is the method of Mohs, who selected the following, arranged in ascending order: 1, talc; 2, rock-salt or gypsum; 3, calcite; 4, fluor-spar; 5, apatite; 6, orthoclase feldspar; 7, quartz; 8, topaz; 9, corundum; 10, diamond. The intervals between the hardnesses in this scale of minerals are known to be very unequal; nevertheless, it serves well enough for reference. A mineral which scratches orthoclase and is also scratched by it has a nominal hardness of 6; one that scratches apatite and is scratched by orthoclase has a hardness stated as 5.5. A steel knife scratches, with varying degrees of readiness that are soon appreciated, all minerals with

a hardness of 5.5 or less. The thumbnail scratches those with 2.5 or less.

The specific gravity of minerals is measurable with far more accuracy, but, owing to impurities and inclusions, it need not be stated for ordinary specimens beyond two places of decimals. Crystals too small for suspension on a balance, and even tiny fragments, the purity of which may be established by examination with the microscope, may be immersed in liquids of known density. A liquid denser than the mineral may be diluted until the particle neither sinks nor swims upon it. This method is especially applicable to gems, and to fragments broken from ordinary rock-forming minerals, where the crystals are, as frequently happens, very small.

Prof. W. J. Sollas has shown that a solvent or a less dense preparation may be added to a column of a dense liquid in a test-tube, so as to produce a column the density of which increases downwards. This is due to the slowness with which diffusion takes place. The density in the column at any point can be ascertained by dropping in fragments of minerals, or glass beads, the density of which has been determined. With these as indices, the density of a mineral particle may be found by the level at which it comes to rest in regard to the levels adopted by the indices.

Practised mineralogists at once notice the relative weight of a mineral specimen when they lift it in the field. There is here a combination of senses; the eye appreciates the volume and the hand appreciates the weight. In this way such an observer is not likely to mistake a lump of barytes, with a specific gravity of 4.5, for the similarly white and cleavable, but less valuable, mineral calcite.

The optical characters of minerals are intimately related to the symmetry of their crystalline structure. This symmetry is sufficient in the cubic system to render minerals of that system optically isotropic, that is, equally affecting light rays whatever their direction in the crystal. Such minerals possess single refraction, and behave, indeed, like amorphous substances. The transparency of large masses of calcite long ago called attention to the double refraction of light by minerals of other systems, and this property is now utilised in researches on thin slices under the microscope. The translucency of most rock-forming minerals in such circumstances has made optical characters of the first importance to geologists.

The modes of occurrence of minerals are often suggestive of their modes of origin. A choice specimen may take its place in the cabinet, but for the correct understanding of it we must learn its place in nature. Many crystals have developed during the cooling of molten masses at the earth's surface, or far more slowly in cauldrons underground. In sedimentary rocks the minerals may have been rounded by friction in the beds of ancient rivers or on the shores of long-forgotten seas.

In the parent rocks we encounter the lodes or veins, which represent the infilling of fissures by emanations from above or from below. The main material may be something familiar, such as quartz or calcite, deposited from circulating waters in the crust; but in cavities and interstices, or intimately diffused, there may be ores of lead or copper, or even metallic gold. Often nodules or concretions have arisen, looking like flattened pebbles, but sometimes of gigantic size. The siderite (iron carbonate) of our coalfields has collected in this massive form from a state of diffusion in the surrounding shales. A mineral body is often a true replacement of the rock in which it occurs, and its concentration has been accompanied by an outward diffusion of the substance originally on the spot. Considerations such as these give mineralogy its rightful place, not only with the physicist, the chemist, and the miner, but in the studies that reveal the natural history of the earth.

Another point to be noted in the occurrence of minerals is that certain types of minerals occur together with great frequency. In saline deposits, for example, gypsum, rock-salt, carnallite, and epsomite are commonly found together, while in basic rocks, olivine, augite, and soda lime feldspars are group minerals. Such groups of certain



Mineralogy. 1. Marcasite, showing internal radial structure. 2. Hopper-shaped crystals of salt. 3. Haematite, with nodular exterior and crystalline internal structure. 4. Dendritic pyrolusite. 5. Olivine crystal. 6. Pyrite. 7. Octahedral crystals of Magnetite in Schist. 8. Crystals of Fluorspar. 9. Quartz crystals

From specimens in S. Kensington Museum and in the Museum of Practical Geology

minerals afford a link between the work of the mineralogist and the geologist, for such groups of minerals have been formed by certain well-defined geological processes. By metamorphic action, for example, garnet, tremolite, vesuvianite, etc., have been formed; by dynamo-metamorphism, *i.e.* by the effect of pressure on rocks of igneous origin, new minerals have been formed from others, *e.g.* orthoclase has been transformed into muscovite, olivine into tremolite, pyroxene into amphibole, etc.

Though the number of names given to minerals is in the neighbourhood of 5,000, due to the erroneous naming of varieties, the number of minerals known is about a thousand.

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Mineral Waters. Term applied to water containing saline ingredients and often carbonic acid gas. It mostly refers to natural waters which are used in the treatment of disease, either internally or in the form of baths. Some waters, such as Apollinaris and Perrier, are only slightly impregnated with saline matter, and are on that account especially adapted for use as table waters, and on account of their freedom from iron they can be mixed with whisky without discoloration. The term is also applied to aerated waters.

There are many well-known mineral waters containing sodium sulphate (Glauber's salt) and magnesium sulphate (Epsom salt) in sufficient quantity to make them useful saline aperients. This class of water has been very successfully prepared artificially in Great Britain.

A number of natural mineral waters contain iron salts and are known as chalybeate. Examples are Flitwick (Bedfordshire); Harrogate; Llandrindod (Wales); Bussang (France); Spa (Belgium); Tunbridge Wells. Barium occurs in Llangammarch (Wales) water; bromine and iodine in Woodhall (Lincolnshire) water; lithium in Baden-Baden water. Other waters such as Bath are radio-active and give off argon, helium, niton, krypton, and xenon gases. Bath water is an example of a thermal mineral water, the temperature being from 88° to 120° F. Droitwich water contains about 2,712 grains of sodium chloride (common salt) per pint, and is used at a temperature of from 98° to 101° F. for muscular rheumatism and sciatica. See Aerated Waters; Spa.

Mineral Waters Duty. British tax first imposed in the United Kingdom in the Budget of 1916. It was one of 4d. a gallon on table waters prepared with sugar or fermented, and 8d. a gallon on all other waters. Cider and perry were taxed at the rate of 4d. a gallon. The duty on sweetened table waters was abolished in 1924.

Miners' Federation of Great Britain. British trade union of coal-workers. It was established in 1888 with a membership of 36,000, being a federation of about 20 independent organizations, notably the Yorkshire Miners' Association (1858) and the Lancashire Miners' Federation (1881). From 1889 onwards the national conferences of miners were held under its direction. The strike of July–Nov., 1893, when it had increased to over 200,000 members, was its first great trial of strength. From 1918–24 Frank Hodges was secretary, and in 1919 the federation secured

the nomination of six of the statutory commission appointed to inquire into the coal industry. The federation then and throughout 1920 made a determined stand for nationalisation of the industry. With the National Union of Railway Men and the Transport and General Workers' Union, it formed the triple alliance of British labour. In 1920 its membership was nearly 900,000. Its resistance to the call for reduced wages culminated in the national stoppage April 1–June 28, 1921. Its headquarters are at 55, Russell Square, London, W.C. See Coal; Trade Unions.

Minerva (Lat. from the same root as *mens*, mind). In classical mythology, the Italian goddess



Minerva. Antique statue of the Greek goddess, Vatican Palace, Rome

whom the Romans identified with the Greek Athena. One of the chief Roman deities, she was worshipped in the temple on the Capitol. She was the goddess of wisdom, and the patroness of all the arts and crafts. After her identification with Athena she became the goddess of war, and spoils were often dedicated to her. A festival was held in her honour at Rome from the 19th to the 23rd day of March. See Athena.

Minervino-Murge. Walled town of Italy, in the prov. of Apulia. It is 28 m. by rly. S.S.W. of Barletta, and produces fruit, vegetables, and olive oil. There are quarries near by. Pop. 17,000.

Mine Surveyors, INSTITUTE OF. British society. It was founded by the chief surveyors of the largest collieries in South Wales in March,

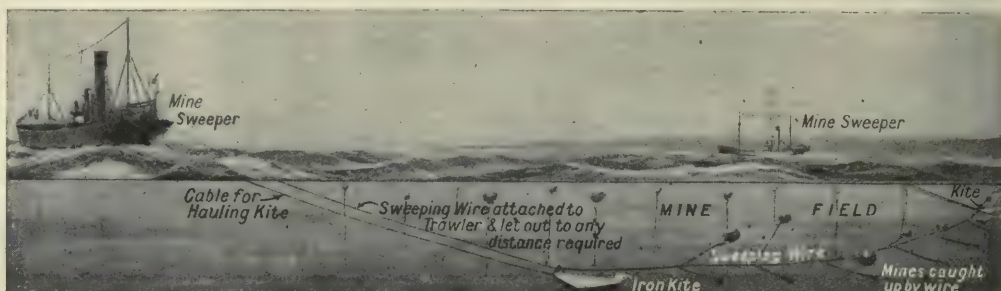
1919. The objects of the institute, which is governed by a council composed of two representatives from each branch, are to secure the advancement of the art of surveying in all its branches, to lay plans for the development of mineral areas, and to valuate the same, and to promote the general interests of the profession, as well as to safeguard the training and status of its members. Mine surveyors are employed to make surveys and plans of the surface and mineral workings; they also keep the royalty accounts. The Coal Mines Act of 1911 requires all mine surveyors to be certificated.

The institute has eight branches, Lancashire and Cheshire; Midland Counties; North Wales; Northumberland and Durham; Scotland; South Wales; Staffordshire and Warwickshire; and Yorkshire; having a membership of about 800. A large amount of technical work has been accomplished, and full records of this are contained in their Transactions, which are issued quarterly.

Mines, ROYAL SCHOOL OF. London teaching institution. It was founded in 1851 under the title of The Government School of Mines and of Science applied to the Arts, through the initiative of Sir Henry de la Bèche, F.R.S., and as one product of that development of public interest in technical education which followed upon the Great Exhibition. Its title has been frequently changed, and in 1881 it was completely reorganized in connexion with the Science and Art Department of South Kensington. In 1890 it was called The Royal College of Science with which is incorporated the Royal School of Mines, and it is now embodied in the University of London. There are schools of mines in various mining centres, three of the best known being the schools at Camborne in Cornwall, at Johannesburg, S. Africa, and at Chemnitz in Saxony.

Mine-sweeping. Mine-sweeping is the antidote to mine-laying. It comprises two main departments: that by which a pathway is cleared for shipping, which is the sphere of the mine-trawler; and that by which a ship clears a pathway for herself by the agency of the paravane.

At the beginning of the Great War the only British organization actually existing for mine-sweeping was a nucleus of vessels formed originally by Lord Fisher. Twelve trawlers, manned by naval ratings, were employed for instructional purposes, and there was a small trawler reserve. Mine-sweeping stores had been distributed, and



Mine-Sweeping. Pictorial diagram showing how the sweeping wire, drawn by two vessels, catches the mines without exploding them. When a number have been thus collected they are exploded by a heavy charge

officers had inspected the areas they were to command. At the close of hostilities the British navy possessed 31 paddle mine-sweepers, 57 twin-screw mine-sweepers, and 9 "tunnel" mine-sweepers. But the major part of the work was conducted by a great force of trawlers, drifters, yachts, motor-boats, and other vessels, officered and manned by crews drawn from the entire seafaring community. They were constantly employed in all the waters surrounding the British Isles, at the Straits of Gibraltar, at the Otranto barrage, and for a long time at the Dardanelles, often under fire and the menace of bomb-dropping aeroplanes.

The general system is based on that of trawling for fish, but the mine-trawlers work in pairs, steaming abreast at the required distance and dragging between them a weighted steel wire sweeping hawser. When the hawser encounters the mooring of a mine it cuts or breaks it, and the submerged case rises to the surface, where it may be exploded by gunfire. Other systems have been tried, including an explosive sweep, but most of the mine-sweeping in the war was achieved, with several varieties of equipment, by this simple and direct system. The operations of the mine-trawlers in the war were directed to the sweeping of the sea avenues, thus made safe for shipping; and practical immunity was fully secured for those ships which obeyed the navigational instructions they received before sailing.

Mine-sweeping by trawlers did not end with the hostilities. In March, 1919, infinitely more mines required to be swept up than had been removed during the war. A Mine Clearance Service was organized numbering over 13,000, and to its members the king's badge was issued. It was disbanded in Nov., 1919. But mine-sweeping continued, and not until the middle of 1921 was the North Sea fully cleared of mines. For many years after the Russo-Japanese War dis-

asters from drifting mines were not infrequent in the waters of the Far East. See Paravane.

Minette. In geology, name given to an igneous rock composed chiefly of orthoclase feldspar and biotite. Minette is rich in ferro-magnesian minerals. It forms one of the chief ores of the German and Belgian smelting industries and belongs to the Jurassic system of rocks. Minette is the German word for iron ore. See Iron.

Minghetti, MARCO (1818-86). Italian statesman. Born at Bologna, Sept. 8, 1818, he was educated at the university there, travelled in Europe, and made a study of political economy, taking especial interest in the free trade movement in England. In 1846 he started a newspaper, *Il Felsineo*, which brought him such reputation that in 1848 Pius IX made him minister of public works. Very soon, however, he espoused the cause of Italian unity and joined the army of Charles Albert, distinguishing himself at the battle of Custoza, 1848. A friend of Cavour, he became secretary-general to



Marco Minghetti, Italian statesman

the ministry of foreign affairs in 1859, and in 1860 minister of the interior. From 1863-64 he was prime minister. In 1868 he was appointed ambassador to London, and held a similar appointment in Vienna, 1870-73, when he returned to Italy and again became prime minister, retaining office until 1876. Minghetti died at Rome, Dec. 10, 1886.

Mingrelia. Region of Georgia. It is in the dist. of Kutais in Transcaucasia, and is a vast, extremely fertile plain, also producing iron, gold, and manganese. The inhabitants belong to the Georgian stock, though speaking a distinct language. Mingrelia, the ancient Colchis, was for some time tribu-

tary to Georgia, but regained its independence in 1414. It was annexed by Russia in 1867. Area, 2,400 sq. m. Pop. 230,000.

Minho or **Minho** (anc. *Minus*). River of N.W. Spain and N. Portugal. Rising in the N. highlands of the prov. of Lugo, it flows through it and S.W. through Orense. It then divides Pontevedra from Vianna do Castelo in Portugal, falling into the Atlantic Ocean, S. of Guardia and N. of Caminha, after a course of 173 m. The area of its drainage basin is est. at 157,000 sq. m. It is navigable by small vessels only for some 25 m., up to Salvatierra in Galicia. Its estuary is wide, but is impeded by a sand bar. The Sil is its chief tributary.

Miniature. Although the word miniature has come to connote size, i.e. portraits small enough to be held in the hand, it was derived from *minium*, the Latin word for the red lead used in illuminated MSS. for the delineation of illustrations in small size. These were doubtless at times cut out and framed separately.

Probably the French miniatures attributed to Clouet were actually cut out from MSS. Certainly at first miniatures were painted on vellum, parchment, or chicken skin, stretched upon cardboard, usually on a portion of a playing card. Thence the idea was adopted of painting actually upon cardboard and, in the 17th century, on ivory. Miniatures have also been painted on copper or silver, slate, lapis lazuli, and marble.

The greatest exponents of the art have been Englishmen, but it received ready acceptance on the Continent, and some of the best painters in the 18th century were Frenchmen or Swedes. Some of the finest miniatures were executed by Holbein (1497-1543). Following him came Nicholas Hilliard (1537-1619) and his followers and the two Olivers, Isaac (d. 1617) and Peter (d. 1647). Their works are marked by extreme attention to detail, simple technique, a striking absence of shadows, the presence, as a

rule, of a bright blue background, and a masterly skill in representing costume and coiffure. Colour schemes improved as time went on, Peter Oliver using in many instances a rose-coloured curtain, or some such drapery. The Olivers were followed by Hoskins (d. 1665), a man of greater ability; who, not entirely neglecting the blue background, introduced glowing colour schemes, and painted miniatures greater in importance than his predecessors had done.

He was succeeded by Samuel Cooper (1609-72), who excelled all who had gone before, and whose work in dignity, breadth, and ability has never been equalled. The constantly repeated Walpole phrase to the effect that a miniature by Cooper is like a life-sized Van Dyck seen through the small end of a telescope is by no means lacking in truth. Cooper's small portraits are perfect reproductions of character, painted with marvellous truth, keen insight, and striking ability. They are life-like representations, subtle delineations of complex character. His brother Alexander (d. 1660), who worked in Sweden, Denmark, and Holland, was not so great. Lawrence Crosse (d. 1724) was a marvellous painter of lace, and an interesting group of men, who should receive attention, were the members of the Lens family (18th century), half a dozen of whom were able miniature painters.

Working on Ivory

The second great period of English miniature painting is that of the 18th century. The introduction of ivory had given fresh possibilities to the art, and revealed the chance of brilliant execution, luminous quality, and all the charm that the new material, coupled with facility of brushwork, could originate. At the head of the school stands Richard Cosway (1740-1821), a man who had no equal, although many imitators, an exquisite colourist, possessed of just the right ability to flatter, coupled with the skill of representing in a few easy strokes the superficialities of the faces he had to represent.

More serious in his intention, and also more solid in his execution, came George Engleheart (1752-1829), a man of prodigious industry and extraordinary accomplishment. Of quite another sort was John Smart (1741-1811), a profound student of the human face, a draughtsman of exquisite ability and rigid perfection, but a lover of quieter and more Quakerlike colour schemes than were his rivals.

At another angle stand the two Plimers, notably Andrew (1763-1837), remarkable for their brilliant portraits, somewhat monotonous, and often meretricious, but vivid, palpitating, attractive. Those of lesser importance were Meyer (1735-89), Ozias Humphry (1742-1810), Shelley (d. 1808), Edridge (1769-1821), Wood (1768-1809), Scouler (d. 1810), and Grimaldi (1751-1830); and around them were the numerous miniature painters of the 18th century, whose work crowded the Royal Academy of the day. Amongst these were many such as Hill (c. 1770-91), Bogle (c. 1769-1803), Vaslet (fl. 1775), who at times could paint a miniature with such extraordinary skill that the object became a *tour de force*; but these occasional portraits were like meteors, flashing across the artistic sky, and their usual productions were on a far lower level, although almost invariably artistic productions.

French Miniature Painters

The 19th century saw the degeneration of miniature painting, although the works of Newton (1785-1869), Ross (1794-1860), Thorburn (d. 1885), and others are worthy of attention, but costume and coiffure were not favourable, and the period could not be termed an artistic one. In France miniature painting has had great exponents, although one of the greatest French miniature painters, Hall (1739-93), was a Swede rather than a Frenchman. French miniature art, however, attained its zenith when Isabey (1767-1855) and Augustin (1759-1832) were working. In enamel no one has ever equalled Petitot (1607-91), while Prieur (d. 1677) comes very close to him.

Lately the art has shown a recrudescence, and there are skilful miniature painters living at the present time. Two or three stand out pre-eminent. The greatest perhaps of all is a Dane, J. W. Von Rehling Qvistgaard. The leader in England is Alyn Williams, and others whose names deserve notice are Ernest Lloyd, Gertrude Thomson, M. Edgerley, Bess Norris, P. Quinell, and Laura Hills. See Cosway, R.; Hazlitt, W.

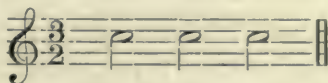
G. C. Williamson

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Minicoy. One of the Laccadive Islands, Indian Ocean. It is an isolated coral atoll between the main Laccadive and the Andaman islands, and is joined with the S. group of the Laccadives under the administration of the collector of Malabar.

Minim. Smallest practical unit of liquid measurement in apothecaries' or wine measure. It is equal to one drop. There are 60 minims to one fluid drachm, 480 to a fluid ounce, and 9,600 to one pint. The minim is denoted by the symbol m.

Minim. Musical note consisting of an open oval head with a stem, ♪. Its time-value is one half of a semibreve (C) or two crotchets (♩). It is sometimes a pulse note, especially in Church music, and its symbol in the time signature is 2. Thus $\frac{3}{2}$ means three minims in a bar. See Time.



Minimum (Lat. *minus*, smallest). Literally, the smallest amount possible, the opposite being maximum. A minimum price is the lowest possible price which a prospective seller will take for his property. See Maxima and Minima.

Minimum Wage. Term generally used for the fixing by law of the lowest wage, or rate of wages, at which a worker may be employed. The principle of a minimum wage was put forward in the 19th century, as the idea of *laissez faire* gave way to that of state interference in industry, and to-day it is universally accepted. Owing to variation in the cost of living and conditions of employment, it has not been found practicable to lay down a universal minimum.

In the United Kingdom a beginning was made in the Trade Boards Act of 1909 which scheduled certain industries for treatment, boards to be set up in these for the fixing of minimum rates of wages. This was done in the box-making, tailoring, lace-finishing, and other industries. In 1912, by the Coal Mines (Minimum Wage) Act, the miners secured minimum rates to be fixed by joint boards of masters and men in the various districts. By the Corn Production Act, 1917, the principle was extended to agricultural labourers, whose minimum wage was fixed at 25s. a week. Higher rates were afterwards ordered by the various district boards, but the Act was repealed in 1921.

The economic objection to the minimum wage is that it tends to drive the less-efficient workers

out of employment. This difficulty is provided for in the various Acts which allow persons partly incapacitated to be paid at rates below the minima. The same principle is also introduced with regard to juvenile workers and learners; the Trade Boards Act, for instance, allows them to be employed at lower rates. In 1920,

in connexion with the strike of the agents of the Pearl Insurance Co., it was generally recognized that £3 per week was a minimum wage for an adult male worker. The principle of the minimum wage is also enforced in Canada, Australia, and other parts of the British Empire. *See Cost of Living; Sweating; Wages.*

MINING: OLD AND MODERN METHODS

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See in connexion with this general sketch the articles Coal, Gold, Lead, Tin, etc. See also Bord and Pillar; Cage; Longwall; Prospecting; and other subjects connected with mining operations; Geology; Metallurgy; and Mineralogy

The art of mining, in its widest sense, is the art of extracting mineral substances of intrinsic value from the crust of the earth, and rendering them marketable. The word mineral is here used in its legal and commercial sense, and not as defined by mineralogists; furthermore, the word extracting is not intended to apply merely to the removal of the mineral, but to all the operations incidental to the extraction, and further, it is applied so broadly as to include not merely the mechanical act of severing the mineral from its deposit in the earth's crust, but also to cases where such severing is performed quite indirectly. For example, boring for oil is included under the general head of mining.

Mining must have been amongst the earliest of the technical arts. The ancient Greeks were skilled miners as well as metallurgists, and in their time special legislation was enacted to regulate mining, showing that the industry was one of considerable importance. In Roman times mining was carried on extensively throughout all Roman colonies, and Central Europe in particular was the seat of an important mining industry. In Britain mining must have been pursued vigorously even before the Roman occupation; the fact that the Phoenicians traded to Cornwall for tin is quite generally admitted, while evidence of the mineral wealth of Britain is to be found in Tacitus and other Roman writers.

Early Mining

The first systematic description of mining methods is that given by Georgius Agricola, manager of the mines of the Electorate of Saxony, whose *De Re Metallica* was published in 1556. The miner's tools were picks and pointed bars for working soft ground, and wedges and hammers for harder ground, while the hardest rocks were attacked by firesetting. This process consisted of laying a great fire of

wooden billets against the face of the rock to be worked, the flames being directed on to the rock. When this had been sufficiently heated, the fire was raked back and water thrown on the heated surface; the latter was thus shattered and fissured sufficiently to enable it to be broken out by means of wedges; when the solid face was again reached, the operation was repeated, and so on. This method continued in limited use in Southern Norway until as recently as 1884.

Use of Gunpowder

Meanwhile, however, the first great improvement, that may be regarded as the commencement of modern methods, had been made, namely, the application of gunpowder to the blasting of rocks. Gunpowder does not seem to have been used for blasting until 1613, when it was employed for this purpose in Saxony. It continued to be the only explosive used until Schönbein discovered gun-cotton in 1846, while in the year following Sobrero discovered nitro-glycerine; these substances were not used at all extensively until Nobel produced dynamite in 1866 and blasting gelatine in 1875. Meanwhile Bickford had rendered all blasting easier and safer by the invention of the safety fuse in 1831, and electric shot firing, first used in mines about 1870, contributed still further to the development of this branch of the mining industry.

Long before this, however, the steam engine had been invented. Its first use in mines is said to date from 1711, and it has affected every aspect of mining engineering; in particular it has led to the employment of mechanical means of getting mineral, as witness the rock drill and the mechanical coal-cutter. The first conception of a mechanical drill was due to an American, Fowle, who patented such a machine in 1871, but it was first really employed by Sommeiller at the Mont Cenis Tunnel in

1861; two years later it was applied to mining at Moresnet in Belgium, and mechanical drilling in all its different forms is to-day an essential in mining operations.

Coal-cutting seems to have been attempted much earlier; the first record of an attempt at mechanical coal-cutting was a patent taken out by Menzies in 1761, which was not, however, successful. He was followed by a number of other inventors, and the prototype of the machines in use to-day appeared soon after 1850; the first disk machine is said to have been made in 1851, the chain machine in 1853, and the bar machine in 1856.

The general result of these great modifications, the use of explosives and of mechanical power, has been to bring about the present aspect of the mining industry, namely intensive mining, where the object aimed at throughout is that of production on the largest possible scale. Until about 1870 mining was practically confined to rich deposits, or such as could be worked on a small scale with a minimum of expense. Modern mining aims at the working of low-grade or poorer deposits, utilising mechanical means to the utmost in order to reduce working costs.

Principles of Modern Mining

Modern mining has thus become an exceedingly complex art. It includes:

1. Prospecting or searching for minerals, including, of course, prospecting by means of boreholes.

2. Opening up mineral deposits by means of shafts or adits as may be necessary.

3. Exploitation or the getting of minerals properly speaking, covering all methods of getting by hand and machinery, dredging, blasting, etc., as well as the methods of laying out the mine in order that all the various operations may be performed most economically.

4. Transportation, covering the various methods employed for transporting the broken mineral to the surface.

5. Keeping the workings free from foul air and water, this covering the subjects of ventilation and drainage; under this head may also be considered all questions relating to the health and safety of miners, the lighting of mines, and prevention of colliery explosions.

6. Mineral after it has been extracted is only exceptionally clean enough to be marketable, and it usually has to undergo an operation, or more often a series of operations, to fit it for the market; these operations are included under the term "dressing"; in the case of coal this is often spoken of as

"coal washing," an unfortunate term, because it renders necessary the use of the further phrase "dry cleaning of coal," when such methods are employed.

In all mining operations the methods adopted depend essentially upon the nature of the mineral deposits which it is intended to work. For this purpose mineral deposits may be classified as (a) Symphytic deposits, that is, deposits which form an essential part of a geological formation, and are therefore stratified and form more or less continuous beds; as examples of these may be quoted coal seams, beds of iron-stone, beds of rock salt, the auriferous "reefs" of the Witwatersrand, the cupriferous schists of Mansfeld, etc.; (b) Epacitic deposits, or deposits which do not form members of a geological formation; these are sub-divided into:

(1) Veins, like the lead veins of Alston, the tin veins of Cornwall, the auriferous quartz veins of California, etc. (2) Irregular deposits or masses which may assume many different forms; amongst these are included such deposits as the red haematites of Cumberland, the lenticular deposits of cupriferous pyrites in the Huelva district, the immense masses of magnetite of Kirunaavaara, etc., in Northern Sweden, the nickel and copper-bearing pyrites deposits of Sudbury, Canada, the porphyry deposits of the Western States of America, consisting of masses of monzonite, portions of which are sufficiently rich in disseminated copper ores to constitute them an ore of that metal, etc. It is obvious that the methods of searching for, opening up, and working these deposits must be conditioned essentially by the nature of the deposits themselves and by their mode of occurrence.

Scope of Prospecting

Prospecting operations include various methods of searching, trenching, etc., on the surface, and more particularly deep boring operations for the discovery of deep-seated mineral deposits. It is obvious that these can be applied with much advantage in the case of the bedded deposits referred to under a above; they are also frequently used for deposits of the b(2) type, when these are known or supposed to be of reasonably large dimensions; they are, however, practically useless for veins, for since these latter lie approximately vertical and carrying generally their values in relatively restricted areas, a borehole put down from the surface would in all probability miss the deposits altogether, or even if it penetrated

them it would be purely a matter of accident whether it happened to strike a rich or a poor portion. Very deep boreholes have been put down in searching for coal, oil, and the auriferous reefs of the Witwatersrand, the deepest borehole in the world being at Zouchow, Rybnik, in Upper Silesia, which has reached a depth of 7,350 ft.; another one at Virginia, U.S.A., is 7,310 ft. deep.

Mineral deposits are opened up either by means of tunnels driven in from the surface, usually spoken of as adits or day drifts, or else by means of shafts. The first named method is only applicable in mountainous or broken ground, where considerable portions of the deposit lie at a higher point than some readily accessible portion of the surface, as for example in the bottom of a valley. Relatively few mineral deposits are situated so advantageously as to admit of this method of attack, which is naturally always employed whenever possible. In most cases where an important deep adit is driven, it is arranged to serve as a drainage adit, as a means of access to the deposit, and as a travelling road, by means of which the minerals wrought in the mine are transported to the surface.

Types of Shafts

By far the greater number of mineral deposits are opened up by means of shafts, this being naturally the usual method when dealing with bedded deposits. There are a number of very deep shafts in various parts of the world; probably the deepest at the present moment is the shaft at Morro Velho in Brazil, which has reached a depth of 5,826 ft. Shafts as a general rule are vertical, but inclined shafts are sometimes used, either to follow down a steeply pitching deposit, or to get past some obstacle. Ordinary shafts are either rectangular in cross section or circular, local custom being often the sole guide as to which should be employed.

Thus, the majority of colliery shafts in the S. of Scotland are rectangular, while similar shafts sunk under similar conditions S. of the Tweed are almost without exception circular. The cost of sinking a shaft and the methods employed in sinking it necessarily depend upon the nature of the strata to be passed through, particularly as to whether they are water-bearing or not; shafts through strata carrying only a moderate amount of water are generally sunk by blasting. A small amount of water may be hoisted by buckets, but it is more

usual to employ pumps; the lining of such shafts depends mainly upon their form. Rectangular shafts are generally timbered, circular shafts are lined with brick work. The cost of sinking increases rapidly if water is met with, anything more than 100 gallons per minute adding greatly to the outlay and to the time required for the operation.

Shafts for Deep Sinkings

At Horden, co. Durham, shafts were sunk to a depth of 1,260 ft. by ordinary methods, using pumps, against a flow of 9,000 gallons per minute, but this is by far the largest amount that has ever been successfully dealt with in this way. Under ordinary conditions, especially in the case of deep sinkings, a flow of 2,000 to 3,000 gallons per minute necessitates the use of special methods, and even much smaller quantities of water than these may render ordinary methods prohibitive, if layers of quicksand of any thickness have to be passed through. Shafts in wet ground, however sunk, are usually lined watertight, either by the use of cast iron tubing (quite exceptionally steel), concrete, or in recent times more often ferro-concrete.

The subject of exploitation, or the getting of minerals, involves not only the actual severance of the mineral from its deposit, but the entire subject of laying out the mine to best advantage, and the special methods used for attacking the face of the mineral.

(a) Bedded deposits, like coal seams or beds of ironstone, usually lie at very flat angles, and the methods usually described as bed mining are applicable to them, as to all other deposits lying more or less horizontally and of moderate thickness, as is typically the case with the majority of coal seams in this country. There are two main methods employed, usually classified as Longwall and Bord-and-Pillar, both described under their respective headings.

There are several varieties of longwall, that known generally as advancing longwall being the most usual; in what is known as retreating longwall the roads are driven to the boundary and the longwall face is brought back towards the shaft, leaving the goaf on the in-bye side of the coal, thus avoiding the necessity for the maintenance of goaf roads. This is the safest and, as regards actual working, the cheapest form of longwall, but is not applicable except in the case of comparatively small royalties.

Bord-and-pillar working differs from longwall essentially in that the coal is gotten in two distinct

operations, known as working in the whole coal and working brokens. Practice in bord-and-pillar working varies considerably in different districts. A modification of this system is often spoken of as the Welsh stall method; in this, stalls 12 to 18 yds. wide are driven, leaving ribs of coal 18 to 24 yds. between them; when the stall has been carried forward to the full length as laid out, the men in it turn round and work backwards, each winning off half the width of the rib.

Under-cutting

The actual operation of coal-getting is usually performed by kirving, or under-cutting the seam, either in the coal itself, or in a band of sufficiently soft material beneath the seam, or occasionally in the seam itself. The coal may then be broken or wedged down, but more often has to be brought down by drilling shot-holes in the coal, and blasting. The operation of under-cutting is the most laborious part of the collier's work, and this is now, when conditions are suitable, performed by coal-cutting machinery. In a few cases the whole of the coal is got by scalloping, that is, hewing down the whole of the seam with the pick; but this method is only applied to soft coals, especially intended for coking, where there is no advantage in getting round coal.

(b) Mineral veins are usually opened up by means of a series of levels, which may be from 50 to 200 ft. apart vertically; these may either be driven in as day drifts, or more often are set off from a shaft at corresponding depths. The level is then carried along the vein, and the vein-stuff between each pair of levels is won off by stoping. This is what is usually known as over-hand stoping, where the stope is carried upwards from the level. The older method of under-hand stoping, or carrying a stope below the floor of the level, is sometimes resorted to in special circumstances. As a general rule only a portion of the contents of a mineral vein are worth further treatment, although the entire vein has often to be broken down in order to get the valuable portion. Such of the material as is not worth further treatment, which is usually known as deads, is left in the stopes, and the workers in over-hand stoping rise up on the pile of deads thus formed.

Passages known as shoots, passes, mill-holes, etc., are arranged at intervals through the deads, and through these the payable ore is sent down to the levels, along which it is trammed out to the

day or to the shaft, as the case may be. In some parts, notably in West Australia, the method known as rill-stoping is employed; this is a form of over-hand stoping in which the back of the stope, instead of being practically horizontal, is carried at an angle of 45°. In contradistinction to rill-stoping, ordinary over-hand stoping is sometimes designated flat-back stoping. In relatively wide veins lying at not too flat an angle, with good walls, where the whole of the vein-stuff is worth working, shrinkage stoping or magazine mining may be used with advantage. This is a system of over-hand stoping in which the broken-down ore is allowed to accumulate in the stopes, the men standing on it to do their work, and only enough ore being drawn off to leave room for working. This operation is continued until the stope has reached its full height; it then forms a magazine of broken ore, which is drawn off as may be required; meanwhile, of course, other magazine stopes are being started.

Vertical and Horizontal Slices

(c) The method of working masses depends largely upon the form of the mass and the nature of the mineral, and is subject to numerous modifications. Sometimes such masses are worked by a succession of vertical slices running the full length between adjoining cross-cuts, which are driven across a deposit as may be required. Sometimes horizontal slices are carried either longitudinally or transversely across the deposit. The method of top-slicing or caving is used extensively, especially where the mineral is comparatively soft and where its value is not very great, so that it is imperative to adopt a cheap method of extraction, even though this may involve the loss of a certain portion of the mineral itself. It is quite largely used in the red haematite deposits of Cumberland and Lancashire. Square set mining has been used mainly in North America, and consists of supporting the excavations by a framework of strong rectangular sets of timber; it can only be used where timber is plentiful and cheap, and where the mineral to be extracted has a comparatively high value. The method of magazine mining already referred to is quite often used in the mining of masses.

In modern mining practice the use of rock drills and explosives is universal; piston drills, in which the drill point is rigidly attached to a piston caused to reciprocate by the action of compressed air, are generally used for sinking and

drifting as well as in large stopes or other workings; in a more confined space, hammer drills, in which the reciprocating piston strikes a rapid succession of blows on the end of a drill held by the machine, are usually preferred.

Open-cast mining is used in exceptional cases where deposits occur either outcropping to the day, or under a relatively shallow cover of barren overburden. Mechanical excavators and steam navvies are often used.

Alluvial mining may be looked upon as a separate branch of the work, and is applied to the getting of auriferous alluvials, tin-bearing gravels, etc. These are got by hydraulic mining, which consists of disintegrating and washing down the deposits by means of very powerful jets of water under a pressure of several hundred feet of head directed against the face of the rock by monitors or giants; or, when such deposits lie at low levels, and especially when below water level, they are generally won by dredging.

The mineral when obtained has to be transported underground by suitable means to the mouth of the adit or to the shaft, as the case may be. In modern practice this is always done in mine wagons, trams, or tubs, consisting of rectangular bodies carried on four wheels and running on suitably laid rails. They sometimes carry 5 tons, sometimes only 2 or 3 cwt. For short distances such mine cars may be pushed by men or lads, but for longer distances horse haulage is employed. In important mines, where large quantities of mineral have to be carried over quite considerable distances, amounting sometimes to several miles, mechanical haulage is almost invariably used. In mines working bedded deposits, like coal and ironstone mines, the methods usually adopted are those of rope haulage.

Underground Mechanical Transport

Other methods of underground transport are electric locomotives, compressed air locomotives, and so-called fireless locomotives, in which steam under reduced pressure is employed. Ordinary steam locomotives are not suitable for underground work, except in a few isolated instances, where large main adits are available. The use of electric locomotives is growing rapidly, trolley locomotives being used on the main roads, and storage battery locomotives for secondary haulage purposes. In longwall mining face conveyors of various types are coming into extensive use.

After the mineral has been brought to the shaft bottom, it must be hoisted or wound up to the surface. The work is performed by winding engines, which are still mostly steam-driven, although many large and powerful electric winders have been introduced, and are in successful operation.

Pumping is necessary in most mines, though it is noteworthy that the quantity of water met with in deep mines is usually considerably less than in shallow ones. A number of different systems of pumping are adopted. Sometimes sets of pumps are placed in the shaft, each pump having a lift of several hundred feet when it delivers water into a cistern, from which the pump immediately above it draws its supply, and so on until the water is discharged at the surface. In many cases underground electric pumps have been substituted for the above, there being serious objections to a heavy set of pumping spears working in a shaft. Opinions are pretty equally divided between electrically direct-driven, high-speed multi-stage centrifugal pumps and three-throw ram pumps driven by suitable gearing from a motor, each type having its advantages and drawbacks.

Ventilation is necessary in a mine in order to supply the miners with fresh air, to remove the foul air produced by respiration, by the combustion of lamps or candles, and by the gases evolved from explosives; far more important is the removal of large volumes of gas given off from the deposit itself, or from the adjoining strata. In collieries fire-damp is evolved in considerable volume, and in certain collieries, as well as in certain metal mines, large volumes of carbonic acid gas are sometimes given off. Ventilation is usually produced by means of a suction fan, modern practice favouring relatively small fans running at high velocity. In extensive coal mines modern practice uses the system known as splitting the air current, each separate district being ventilated independently of the others by a special stream of air split off from the main current, and diverted into the district in question.

The subject of explosions in coal mines deserves mention. Such explosions are due to two causes, either to the ignition of a mixture of fire-damp and air, which forms an explosive mixture that can be fired by a flame or a spark, or to a cloud of finely divided coal dust suspended in air, which also forms an explosive mixture, though less easily ignited than the gaseous mixture above referred to. It is

generally admitted that, provided the proper precautions are observed, a gas explosion should be practically an impossibility. The problem of dust explosions cannot be considered quite so completely solved as that of gas explosions. It is, however, becoming generally admitted that if coal dust is mixed with 50 p.c. of incombustible dust of a suitable degree of fineness, the mixture is thus rendered incapable of explosion, and modern legislation has adopted this method.

It is only in very rare instances that a mineral, as it comes from the mine, is directly marketable as such, and it usually requires more or less preparation for the market. All methods of such preparation are generally included under the term of "dressing."

The amount of dressing required varies within very wide limits; at the one end of the scale we have those minerals that really require no dressing at all, as when iron ore is loaded direct into railway trucks by means of a steam shovel; at the other end of the scale there are such extremely complex mineral substances as, say, tin ore, which may consist of vein-stuff containing quartz, felspar, and other non-metallic minerals associated with small quantities of iron pyrites, arsenical pyrites, wolfram, and tin-stone, where only the last named, or possibly the last two or three, have any real economic value, and their proportion may not exceed 1 p.c. of the total mass treated; such an ore has to undergo a very complex series of operations, including crushing, washing, calcining, re-washing, magnetic separation.

The most modern method of separation is that depending upon differences in the surface tensions of minerals brought in contact with an air-water interface. This difference in surface attraction has been made the basis of a number of processes for separating minerals by flotation; the origin of these processes may be sought in the discovery by C. V. Potter, in 1901, that it was possible to float up the zinc blende from finely crushed Broken Hill ores in New South Wales. Since then the method has been extensively developed, and in 1920 no less than 70,000,000 tons of mineral were treated by it; without such a process it would be impossible to treat to advantage a number of low-grade deposits of copper ore which are being so extensively worked in the United States, and which are producing quite a considerable proportion of the world's supply of copper. The process is also applicable to the treatment of coal.

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Mining and Metallurgy, INSTITUTION OF. British institution, founded 1892, and incorporated by royal charter in 1915. It devotes attention to both the practical side of mining and to research work. At the monthly meetings from Oct. to May technical papers are read, and afterwards published in Transactions. The institution also issues to members a monthly bulletin. Its offices are at 1, Finsbury Circus, London, E.C.

Minion. In printing, a type one size larger than nonpareil and one size smaller than brevier. Also known as 7-point, it runs to about 10 lines to an inch in depth. In French it is called *mignonne*; in Italian, *mignone*; in Spanish, *miñona*; in German and Dutch, *colonel*. The type called emerald in Britain, and in size between nonpareil and minion, is known in the U.S.A., as *minionette*.

Minister. Latin word meaning originally a servant. It is now used chiefly in two senses: (1) Members of the government are called ministers and collectively the ministry, because they are in theory the king's servants. The head of the government is the prime, or first, minister, and in the 20th century Great Britain adopted the custom, in existence in France, Canada, Australia, and other countries, of making the word the official title of the heads of certain departments, e.g. the minister of health. A minister without portfolio was the designation of a member of the Government who had no departmental duties, among such being G. N. Barnes and Dr. C. Addison. Such were appointed to assist the prime minister during the Great War, and afterwards, but in 1921, owing to a widespread protest, such appointments were dropped. It is also used for those who are sent to represent their country in foreign capitals, e.g. the British minister at Athens. (2) Men ordained for service in the churches of the various Nonconformist bodies are known usually as ministers, or ministers of religion. The Church of England uses the form clergyman. See Clergy; Prime Minister.

Ministry (Lat. *minister*, servant). Word used in two main senses: In religion for the whole body of clergymen or ministers of a religious body and their work, e.g. the ministry of the Church of England; and in politics for the body of ministers of the crown. It does not usually include the civil servants, but only the politicians who hold their offices temporarily and work under the party system. In this sense the word was used in the 18th century by Swift, Wilkes, and others, and this use has spread from England to all the self-governing parts of the Empire, and to many foreign countries.

Later the word was used in another, although cognate, sense. When the various parts of the Empire obtained responsible government they, being without the historic names such as exchequer, treasury, etc., began to call their



Mink. Specimen of the European species, *Putorius lutreola*

departments of state ministries. This use prevails in Canada, Australia, and elsewhere. A similar use has prevailed in France since the establishment of the Republic, and it has recently been followed in Great Britain, where almost all the new departments of state are known as ministries. In France the word is also used for the building in which the ministry is housed. See Health; National Service; Pensions.

Minite. Belgian safety explosive of the carbonite type. It contains nitroglycerine, 25 p.c.; potassium nitrate, 35 p.c.; flour, 39.5 p.c.; sodium carbonate, 0.5 p.c. It is chiefly used in collieries. See Carbonite; Explosives; Safety Explosives.

Minium OR RED LEAD. Name given to a scarlet crystalline compound of lead. It is chiefly lead orthoplumbate, $2\text{PbO} \cdot \text{PbO}_2$, and is made by heating massicot in a reverberatory furnace. Minium when itself heated changes to violet and then black, but becomes scarlet again on cooling. Ignited, it is converted into lead monoxide. It is used in the preparation of flint glass and as a paint. See Lead; Miniature.



Minneapolis. Plan of the adjoining cities of Minneapolis and St. Paul

Mink. Name given to three closely related species of carnivorous mammals, also called vison, belonging to the weasel (*Mustela*) tribe. They resemble polecats in general form, and have soft glossy fur and a bushy tail. In colour they range from yellowish to chocolate brown, and the chin is white. They are always found near water, and feed mainly on frogs and freshwater mussels, but also catch birds and small mammals. All have a particularly penetrating and disgusting odour.

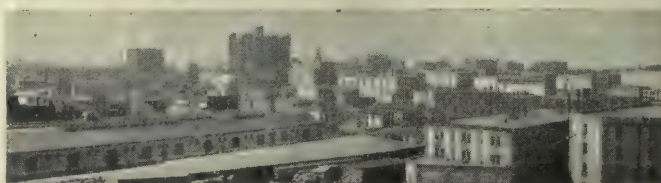
The European mink is found in Poland, Finland, and in most parts of Russia; the Siberian species occurs in the districts E. of the Yenesei river; and the American mink is widely distributed in N. America. The fur is highly valued, especially that of Alaskan specimens; and incessant trapping has made the animals scarce.

Minneapolis. City of Minnesota, U.S.A., the co. seat of Hennepin co. The largest city of the state, it stands on the Mississippi river at the Falls of St. Anthony, adjacent to St. Paul, and is served by the Chicago, Milwaukee and St. Paul and other rlys. The city is pleasantly situated in a lake district which attracts many visitors. Among its buildings are two cathedrals, the university of Minnesota, and the Minneapolis School of Fine Arts. Minnehaha Park covers nearly 3,800 acres, and contains the falls familiarised by Longfellow's *Hiawatha*.

Minneapolis is the largest flour-milling centre in the world and one of the foremost in the lumber industry. Machinery, foodstuffs, linseed oil and meal, and clothing

are also important manufactures, while the volume of its wheat trade is unequalled. Power for its factories is provided by the Falls of St. Anthony. A system of dams and locks, begun in 1915, have greatly increased the supply. The site of Minneapolis was visited in 1680 by Father Hennepin, who gave the Falls of St. Anthony their name. Settlement began about 1847, and in 1856 Minneapolis was incorporated as a town. It became a city 11 years later, and in 1872 St. Anthony, first settled in 1837, was incorporated with it. Pop. 380,600.

Minnesingers (Ger. *minne*, love). German lyric poets who flourished for about 200 years from the middle of the 12th century. The earliest minnesingers developed the native lyric, associated with dancing, but about 1200 the influence of the Provençal troubadours modified the art. Like them, mainly of knightly or noble birth, the minnesingers formed a school of artificial and courtly lyric, with complicated metrical forms, but they differed from the troubadours in their more reverent, semi-religious treatment of love. Many were poets of nature, and some were political and social satirists. They composed the musical accompaniment to their own songs. Most of them were Swabians, or S. Germans. Among the most notable minnesingers—nearly 200 poets are recorded as belonging to the period—are Heinrich von Veldeke, Heinrich von Morungen, Wolfram von Eschenbach, Heinrich von Ofterdingen, Walther von der Vogelweide, Hartmann von Aue, and Neidhart von Reuenthal. The minnesingers



Minneapolis, Minnesota, U.S.A. General view of the business district

were succeeded by the meistersingers (*q.v.*). There have been several collections of the works of the minnesingers in German, notably one in five volumes by F. H. von der Hagen, 1838-56. See Troubadour.

Minnesota. River of Minnesota, U.S.A. Issuing from Big Stone Lake, on the South Dakota border, it flows for 450 m. first S.E. to Mankato and then N.E. to the Mississippi river, at Minneapolis, below St. Anthony's Falls. At high tide small vessels may ascend it for 295 m., and for steamers it is navigable for 45 m.

Minnesota. Northern state of the U.S.A., lying to the W. of L. Superior. The surface, mainly undulating, is marked by a few large and many smaller lakes, including Red Lake (345 sq. m.) and Lake Itasca, from which the Mississippi river takes its rise. Besides the Mississippi, the chief rivers are the Minnesota, Red, and St. Croix, all navigable, and utilised to supply water-power. Largely an agricultural state, Minnesota yields great quantities of maize, wheat, and oats. The mineral wealth is considerable, red haematite, granite, and limestone being worked. The capital is St. Paul and the largest town Minneapolis. The Mesabi iron range is the greatest iron ore district in the world; with the Vermilion and Cuyuna iron ranges it is situated in the forested height of land W. of Lake Superior. The state was admitted to the Union in 1858. Its area is 84,682 sq. m. Pop. 2,387,100.

Minnow (*Leuciscus phoxinus*). Small fresh-water fish, common in the rivers of Great Britain



Minnow. Small fresh-water fish common in British rivers

and of most parts of Europe. It belongs to the same genus as the roach and dace, and is distinguished from them by the broken line which runs along each side of the body. It varies in length from three to six inches, and is largely used as bait in angling for larger species.

Minoan. Alternative name for a pre-Hellenic civilization, also called Aegean or Mediterranean. See Aegean Civilization; Crete.

Minor. In law, a person under 21 years of age. In English law the term infant is used in this sense. See Infant.

Minor (Lat., smaller). In music, a term applied to those intervals of the 2nd, 3rd, 6th, and 7th, which are less by a semitone than the corresponding major intervals. As commonly used in connexion with scales and keys, both major and minor in their signification are obviously absurd; they are merely brief and convenient ways of referring to the scale or key with the larger or smaller 3rd and 6th which differentiate the one from the other, and replace the older expression, "In the key of C with the greater (or lesser) third."

Minorca (Sp. *Menorca*). Second largest of the Balearic Isles in the Mediterranean, belonging to Spain. So called from its being smaller than Majorca, the largest island in the group, it is 25 m. to the N.E. of the latter. It is 35 m. in length, with an average width of 10 m. and an area of about 290 sq. m. The coast is indented and rocky, and the surface hilly; the highest point, near the centre, rises to 1,266 ft. Cereals, wine, oil, oranges, lemons, figs, almonds, and flax are grown; iron, copper, lead, slate, marble, alabaster, etc., mined. Cattle and horses are reared. A good road, built by the British, runs through the island from Ciudadela to Port Mahon. The island is rich in stalactite caves, megalithic remains and ancient towers (talayotes), and other sepulchral monuments. Pop. 40,000. See Balearic Isles.

Minorca Fowl. Breed of domestic poultry supposed to have originated in the island whose name they bear. In reality they appear to be merely a red-faced variety of the white-faced Black Spanish breed, from which they differ also in the shorter and stouter body, shorter shanks, and larger combs. Though champion layers of large eggs, they cannot be prevailed upon to sit. See Fowls, colour plate.

Minorities, THE. London thoroughfare. It runs S. from Aldgate High Street to Tower Hill, E.C., and derived its name from the abbey of the Minoreesses of S. Mary of the order of S. Clare. On the abbey site was built the old parish church of Holy Trinity, rebuilt in 1706, and dismantled in 1899, when the parish was united with that of S. Botolph, Aldgate. In a vault S. of the altar in 1851 was discovered, in tannin, the head, since preserved at S. Botolph's, supposed to be that of Edmund de

la Pole, duke of Suffolk, executed 1513, or of the father of Lady Jane Grey, Henry Grey, duke of Suffolk, executed 1554. Between the 16th and 18th centuries a centre of the gunsmith trade, the Minorities became a Jewish quarter. The thoroughfare figures in Defoe's *Journal of the Plague* and in Dickens's novel, *Dombey and Son*.

Minor Interval. In music, an interval containing one semitone less than a major interval of the same degree. Thus, C-E, a major 3rd, contains 4 semitones, while C-E flat, minor 3rd, contains 3 semitones. The minor triad is the sounding together of a note, its minor 3rd, and its perfect 5th, e.g. C-E flat-G.

Minorites. Name adopted by the early Franciscan friars as an indication that they wished to be regarded as less than the other religious orders. The female branch of the order, founded by S. Clare about 1212, adopted the name of Minoreesses. They are now commonly known as Poor Clares, but the old name still survives in the Minorities, London, where they had a convent. See Franciscans; Poor Clares.

Minor Planets. Group of planetary bodies numbering over 600, the orbits of which lie between those of the planets Mars and Jupiter, and for the most part nearer to Mars. See Asteroids.

Minos. In Greek legend, king and lawgiver of Crete. He was the son of Zeus by Europa, brother of Rhadamanthus, and father of Deucalion, Ariadne, and Phaedra. His wife was Pasiphaë, daughter of Helios, who brought forth the Minotaur, which was slain by Theseus. When Daedalus fled from Crete, Minos pursued him to Sicily, where he was killed by Cocalus.

The foregoing, which is the version of the legend in the ordinary accounts, represents Minos as a monster of cruelty. Other accounts represent him as an able monarch, who made Crete a great maritime power, cleared the seas of pirates, and by wise legislation promoted the welfare of his subjects. After death Minos was made one of the judges of the dead in Hades. Recent archaeological discoveries throw remarkable light on the legend. The labyrinth, i.e. house of the double axe, which, like the bull, was the object of a cult at Cnossus, is probably the great palace there, with its intricate passages. A wall-painting of the Minoan age represents a bull tossing boys and girls. Both Athens and Sicily came under Minoan influence. See Aegean Civilization; Daedalus; Theseus. *Pron.* Mynos.

Minotaur. In Greek mythology, a monster with the head of a bull and the body of a man. It was the offspring of Pasiphaë, wife of Minos, king of Crete, and a bull sent to Minos from Poseidon the sea-god. The monster was kept in



Minotaur. Sculpture representing Theseus slaying the Minotaur, by C. Ramey

Louvre, Paris

a labyrinth constructed by Daedalus (*q.v.*), and a yearly tribute of seven youths and seven maidens from Athens was given it to devour. Theseus, however, came with one contingent of youths and maidens, and with the help of Ariadne slew the monster and found his way through the labyrinth. See Ariadne; Labyrinth; Theseus.

Minotaur. Name-ship of a class of three British cruisers, viz. Minotaur, Shannon, and Defence, built 1906-9. They were 520 ft. long, 74½ ft. in beam, had engines of 27,000 h.p., giving a speed of 23 knots; their displacement was



H.M.S. Minotaur. British cruiser, built 1906-9, which took part in the battle of Jutland

Cribb, Southsea

14,600 tons; armament, four 9·2-in., ten 7·5-in. guns, and three torpedo tubes; and armour 4 to 6 ins. on the side, 1½ ins. on the protective deck, and 7 ins. on the gun positions. Another Minotaur was an ironclad cruiser, built in 1863. See Figurehead.

Minsk. Government and town of Russia. The former was part of the ancient Lithuania, and is bounded N. by the government of Vitebsk, E. by Mohilev and Chernigov, S. by Kiev and Volhynia, W. by Grodno. Its area is 35,000 sq. m. In the N.W. it is high and dry, in the S.E. low and swampy.

Minsk, the capital of the government, stands on the Svisloch, a tributary of the Beresina, and the Brest-Litovsk and Libau-Romny rlys., 275 m. N.E. of Warsaw. Considerable trade is done in flax, hemp, corn, timber, and leather. Fighting took place here in the Great War, and between the Poles and Bolshevik troops in 1920. The former, after capturing the town, abandoned it in Oct. A peace conference was held here in Aug. of that year, but on its breakdown negotiations were resumed at Riga. Pop. 117,000.

Minster (Lat. *monasterium*, monastery). Term originally applied to a church to which a monastic fraternity was attached, as in the case of Sherborne, Wimborne, and Beverley minsters. Latterly it is more loosely used for the principal church or the cathedral of a city, as York Minster. The corresponding German term *Münster* is employed for cathedrals in the Protestant cities of Switzerland and the Rhineland. See Cathedral.

Minster or **MINSTER-IN-SHEPPEY.** Village of Kent. It is on the island of Sheppey, 3¼ m. from Sheerness, with which it is connected by a light rly. S. Mary's Church, part of which is Saxon, is a fine building. There was a convent here in the Middle Ages, of which there are some few remains. Oysters are cultivated, and Minster is visited by pleasure-seekers. Pop. 3,200.

Minster or **MINSTER-IN-THANET.** Village of Kent. It is 4 m. from Ramsgate, with a station on the S.E. & C. Rly. S. Mary's Church

has beautiful Norman and Early English work, the nave, tower, and miserere stalls being especially notable. About 700 a monastery was founded here, and later another, dedicated to SS. Peter and Paul, was established. Both were destroyed by the Danes, and the pre-

sent church is the successor of the one belonging to the older monastery. Pop. 2,400.

Minster Lovell. Parish of Oxfordshire, England, on the river Windrush, between Witney and Akeman Street. The ruined moated manor house is said to have been built by William, 11th Baron Lovel, and there is a legend that his descendant, Francis, 13th baron and 1st Viscount Lovel, a Yorkist, died of starvation in a secret chamber while hiding after the battle of Stoke in 1487. A skeleton, believed to be his, was found in a walled-up room in 1708. The 15th century Perpendicular church was once a cell to the French abbey of Ivry. It contains some interesting monuments and brasses, and was restored about 1865.

Minstrel (old Fr. *menestrel*, one who ministers). Singer or performer on a musical instrument, or both, in the Middle Ages. Corresponding with the Anglo-Saxon scōp or gleeman, of whom Widsith (*q.v.*) was a type, the minstrel proper, or jongleur, came to England at the Norman conquest. Minstrels were at first executants rather than poets, though they might be both. Frequently a company of minstrels attended on a troubadour to render his work. Their popularity may be gauged from the frequency with which they were depicted in manuscripts, and by the minstrels' gallery (*q.v.*).

Minstrels were largely the retainers of noble families, and those unattached were welcome guests at the houses of the rich wherever they wandered. The decline of chivalry, the spread of the art of printing, and probably also the rise of the drama, combined to bring about the decline of the minstrel, and he drifted into one of the wandering classes treated as vagabonds and beggars in the time of Elizabeth. In the remote parts of the country the minstrel lingered on for some time, and Sir Walter Scott in *The Lay of the Last Minstrel* shows his minstrel singing of Border chivalry as late as the reign of William III. See English Wayfaring Life in the Middle Ages, J. J. Jusserand, Eng. trans. L. T. Smith, 1891; and a chapter on *The Decay of Minstrelsy in The History of English Poetry*, 6 vols., W. J. Courthope, 1895-1910.

Minstrels' Gallery. In the medieval mansion, a gallery or balcony (*q.v.*) projecting into the hall (*q.v.*), for the use of the professional minstrels attached to the household. Underneath was usually a passage, screened off, and communicating with the kitchen and buttery. The gallery was a common

feature of Plantagenet and Tudor halls, and good examples remain at Oxford and Cambridge.

Mint (*Mentha*). Genus of perennial herbs of the natural order Labiatae, widely distributed outside the tropics. They have creeping rootstocks, square stems and branches, pungent aromatic leaves, and purplish flowers in whorls. Ten species are recognized as natives of Britain, of which the most important are peppermint (*M. piperita*), yielding the essential oil of the same name (*q.v.*);



Mint. Plants of water mint, showing foliage and rounded flower-heads

pennyroyal (*M. pulegium*); spearmint or lamb-mint (*M. spicata*), grown in gardens for making mint-sauce, and yielding oil of spearmint.

mint. Menthol is obtained from *M. arvensis*. A supply of green leaves may be obtained through the winter by growing in a temperature of 60°.

Mint (Lat. *moneta*). Government office where money is coined. The British Mint dates from Anglo-Saxon times, when mints were scattered all over the country. Gradually their number was reduced, until early in the 18th century all coins for the three kingdoms were minted in London. The present building, The Mint on Tower Hill, was erected in 1810. It is under a master who, since 1869, has been the chancellor of the exchequer, but its real head is the deputy master, a civil servant. It has branches at Melbourne and Perth in Australia, and at Ottawa. The Sydney branch closed Jan., 1924. Sir Isaac Newton was master of the mint, and, like others in that position, he made much money by contracting for the supply of coins.

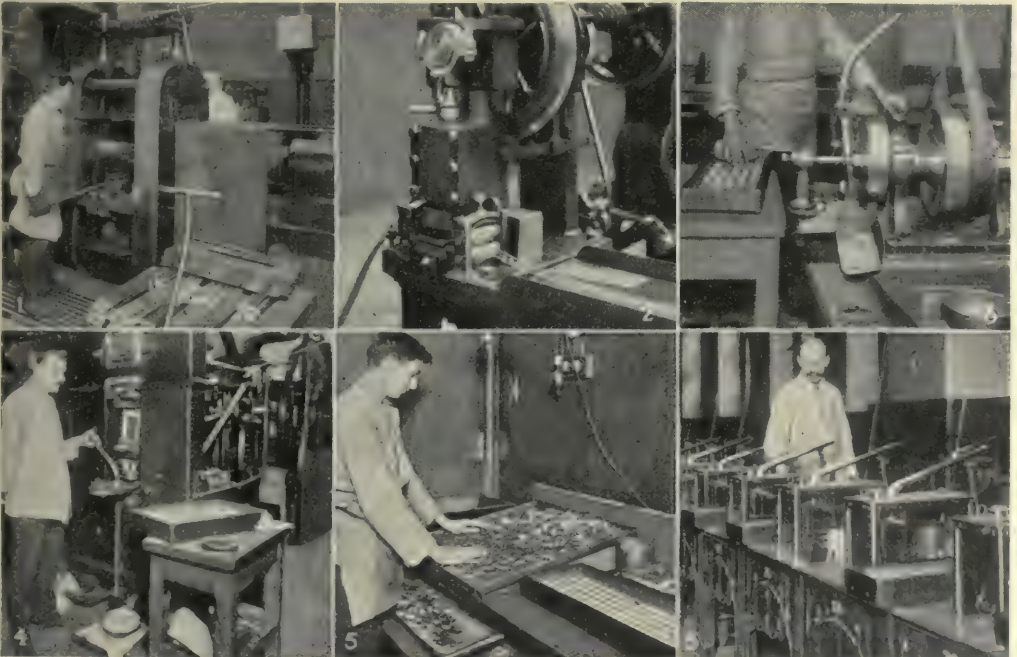
The method of manufacturing gold and silver coin at the Royal Mint, London, is approximately as



Minstrel's Gallery in the nave of Exeter Cathedral, an example of 15th century work

follows: The refined metal is melted in plumbago crucibles and poured into iron moulds. The bars thus formed are passed between cast-iron or steel rollers until they are of the requisite thickness, being kept soft during the process by annealing. The weight of the flattened bars called "fillets" is tested on disks punched out of each fillet by the "tryer," who decides whether they are within the "remedy," i.e. the small margin within which coins in minting are permitted to vary from the standard weight.

After the trial disks have been passed the fillet is put through the cutting machine, in which two



Mint. Processes of coining in the London Mint. 1. Rolling bars of metal to obtain proper thickness. 2. The metal strip is passed through a machine which cuts out disks. 3. Knocking up or raising the edges. 4. Stamping image on obverse side of coins. 5. Coins being passed over perforated tray which sorts out those too small. 6. Weighing coins by machines which automatically reject those too heavy or too light

steel cylinders, driven by an eccentric, punch out from the fillet disks known as "blanks" and force them into two holes in the bed of the machine, the fillet being pushed along automatically until all the blanks are cut out. The metal left over, known as "scissel," is re-melted. The blanks are then "marked," i.e. the edges are thickened so as to form a rim, and the diameter reduced by being placed between a revolving steel plate and a fixed block. Formerly the edges were "marked" with an inscription. After being annealed, the blanks are washed in water and dried in sawdust, the oxide of copper deposited on the silver blanks being removed with hot dilute sulphuric acid.

The blanks then go through the coining press, a modified form of the original Uhlhorn lever press. Each blank is placed on a fixed engraved die and subjected to pressure from another engraved die, being held, meanwhile, in a collar which produces the crenated ("milled") or engraved edge—a precaution against clipping or filing. The blanks, having received the necessary impressions from the dies and collar, are now coins. After being "rung" the finished coins are weighed on the automatic balance, a modification of that designed in 1843 by William Cotton, deputy governor of the Bank of England. Those that are too light or too heavy are re-melted. Sample coins are collected in a "pyx" or box, and annually weighed and assayed by the Goldsmiths' Company—the test being known as the "trial of the pyx." The crown alone has, through Parliament, the prerogative of coinage. See Coinage; Numismatics.

Minto, GILBERT JOHN ELLIOT, 1ST EARL OF (1751-1814). British administrator. The eldest son of Sir Gilbert Elliot, third baronet, of Minto, Roxburghshire, he was born at Edinburgh April 23, 1751, and educated at the Pension Militaire, Fontainebleau, and later at Edinburgh and Oxford. He was called to the bar at Lincoln's Inn, 1774, and in 1776 was returned to Parliament for Morpeth. From 1777-84 he represented Roxburghshire. At first a Whig, he joined the opposition in 1782. He helped Edmund Burke (*q.v.*) in framing the case against Warren Hastings and Sir Elijah Impey. In 1790 he

was returned M.P. for Helston, Cornwall, and was viceroy of Corsica, 1794-96, and governor of India, 1807-13. Created earl of Minto and Viscount Melgund in 1813, he died at Stevenage, June 21, 1814, and was buried in Westminster Abbey. See Life and Letters, 3 vols., 1874; Lord Minto in India, 3 vols., 1880, edited by his great-niece, the countess of Minto.

Minto, GILBERT JOHN ELLIOT-MURRAY-KYNNYND, 4TH EARL OF (1847-1914). British administrator. Born July 9, 1847, son of the third earl, whom he succeeded in 1891, he was educated at Eton and Cambridge, and joined the Scots Guards in 1867, retiring in 1870. He served with the Turkish army, 1877, and with the British in the Afghan War, 1879, was private secretary to Lord Roberts, at Cape Colony, in 1881, and was a volunteer in the Egyptian campaign, 1882. Military secretary to Lord Lansdowne, when governor-general of Canada, 1883-85, he was chief of the staff to the government forces in the N.W. Canadian rebellion of 1885. He unsuccessfully contested Hexham in 1886. Lord Minto was governor-general of Canada, 1898-1904, and viceroy of India, 1905-10. He died March 4, 1914, and was succeeded by his son, Victor Gilbert, Viscount Melgund (b. 1891).

Minton Ware. Soft and hard paste porcelain ware made at Stoke-upon-Trent. The Mintons were making semi-transparent china in 1790. In 1825 they reverted to a white-bodied earthenware, with printed design and a new borax glaze. After further experiments they produced both soft and hard paste porcelain, artistic in design and decoration. Parian ware was also made. The Mintons also introduced encaustic tiles in various styles, majolica, Palissy ware, and

admirable della Robbia plaques and panels, all remarkable for the excellence of body, design, colouring, and the permanence of the non-poisonous glazes. See Pottery.

Minucius Felix, MARCUS. Latin writer and Christian apologist. A lawyer by profession, he practised in the Roman courts. His only known work is the *Octavius*, a dialogue between a Christian and a pagan, at the end of which the pagan announces himself converted. The Christianity expounded by Minucius is of a very broad type; apparently he wrote to influence the educated of his time, to whom he presents Christianity rather as a system of philosophy than as a religion. The author's nationality and the date of the *Octavius*—between 160-250, or even 300—are uncertain.

Minuet (Fr. *menuet*). Dance for two persons in three-four time. It originated in Poitou, and was developed from the *courante (q.v.)*, being more ceremonious and stately than that dance. It was introduced into Paris in 1650, shortly became the most important dance of the court, and has ever since been regarded as the highest form of dancing. There were four variations upon the original dance, the one most used being *Le Menuet de la Cour*. As a musical composition the minuet occurs in many of the suites of Bach and Handel, and in the symphonies of Haydn. See Dancing.

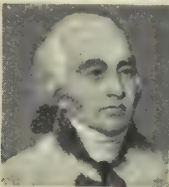
Minuscule. Term applied to the letters of the small cursive writing which the monks of the 7th to the 9th centuries developed out of the previous uncial characters, which are larger and resemble modern capitals. From the minuscule script were evolved the modern small or lower case letters, also called minuscules.

Minusinsk. Town of Siberia. In the government of Yeniseisk, 165 m. S.W. of Krasnoyarsk, it is on the Yenesei river, and the terminus of a branch rly. from the Trans-Siberian main line. There are tallow boileries and tanneries, and considerable trade in corn, cattle, and gold washings. Pop. 10,000.

Minute. In the measurement of time, the sixtieth part of an hour. Minute is also the term applied to the sixtieth part of a degree of a circle, i.e. a minute of an arc, and in architecture it is the sixtieth



4th Earl of Minto, British administrator



1st Earl of Minto, British administrator



Minton Ware. Vases of later Minton earthenware, about 1880. From specimens in the Herbert Allen Collection, Victoria and Albert Museum

By courtesy of H.M. Stationery Office

part of the diameter of the shaft of a classic column. The minute of arc and the minute of time both contain 60 seconds, and the usual abbreviation for the word is the mark '. See Degree; Hour; Time.

Minute Men. Popular name given during the American War of Independence to the militia men who pledged themselves to take the field at a moment's notice. A bronze statue, *The Minute Man*, by a Concord sculptor, Daniel B. French, representing a farmer still at the plough, but grasping a flint-lock musket, stands at one end of the North Bridge at Concord, Mass. See Concord, Battle of.

Minutes. Business term for a summary of the proceedings of the meetings of a company, committee, or other body of men acting in a joint capacity. The record is put down in a minute book by the secretary, and the custom is that at every meeting the minutes of the last meeting are read before other business is proceeded with. If accepted as a correct account, the minutes are then signed and passed, and a continuous record of the transactions of the company or society is kept. By the Company Acts, limited companies must keep minutes both of their general meetings and of those of their board of directors. In the United Kingdom a Treasury minute is the name given to an official memorandum issued from the Treasury.

Minyah, MINIA, MINYA, OR MINEH. Prov. in Upper Egypt, containing the districts of Abu Qirgas, Bahria, Beni Mazar, Feshn, Maghagha, Minia, and Samalut. Area, 651 sq. m. Pop. 764,000.

Minyans. Primitive seafaring race of the Mycenaean age of Greece. They were established at Orchomenos, in the marshy basin of the Copais, and farther north at Iolcus, under Mt. Pelion, whence Jason sailed for the Black Sea in quest of the Golden Fleece.

Miocene. In geology, name given to an epoch of time between the Oligocene and Pliocene periods. The rocks of the Miocene period are chiefly unconsolidated clays and sands, limestones, and conglomerates, and are found in Europe, notably France, Belgium, Switzerland, Austria, and the Mediterranean and America, etc., but are absent in Great Britain. During this period of time there were great geological changes due to volcanic activity and general earth movements, evidences of which exist in the final uplifting of the Himalayas, Alps, the Isthmus of Panama, etc.

During the Miocene period the temperate climes were undoubtedly much warmer than at present,

striking evidence being the formation of Miocene coal deposits in Greenland from the tropical vegetation of the period. The mastodon, dinotherium, rhinoceros, etc.,



Minute Men. Stone erected at Lexington, Mass., marking the line occupied by the minute men at the first engagement in the War of Independence. It is inscribed with the words of their commanding officer, Captain J. Parker

were among the larger animals of the Miocene plains, and also an early ancestor of the horse, the three-toed protohippus, and hippotherium. See Horse; Pliocene.

Miösen or **Mjösen.** Largest lake of Norway. It is situated about 38 m. N.N.E. of Christiania, and extends about 60 m. in a N. direction. Its width varies from 2 m. to 10 m., and its maximum depth is 1,480 ft. The Lougen river flows into it, and it discharges into the Glommen by the Wormen. It contains a fertile island, 10 m. round.

Miquel, JOHANNES VON (1829-1901). German statesman. Of French descent, he was born at Neuenhaus, Hanover, on Feb. 19, 1829, and studied law at Göttingen and Heidelberg. He was



J. von Miquel, German statesman

elected to the Hanover diet in 1864. He was on the governing body of the Diskontogesellschaft in Berlin from 1870-73, was a leading member of the National Liberal party in the Prussian chamber of deputies 1867-82, and entered the Reichstag in 1887. From June, 1890-May, 1901, he was Prussian minister of finance, chosen by William II. In 1897 he was raised to the nobility, and made vice-president of the Prussian ministry. Opposed by von Bülow, he resigned office, and died at Frankfort on Sept. 8, 1901. *Pron.* Mee-keel.

Miquelon, GREAT AND LITTLE. Islands off the S. coast of Newfoundland, forming, with the St. Pierre group, the only French North American colony. The islands are

connected by a strip of sand, $5\frac{1}{2}$ m. long, and have (with St. Pierre group) an area of 93 sq. m. Barren and rocky, the chief pursuit is a declining cod-fishing industry. St. Pierre is the capital. Between 1713 and 1816, they were four times appropriated to England, and as many times restored to France. Pop. (Miquelon group), 443; with St. Pierre group, 5,100.

Mir. Form of village community found among the Russians, Serbs, and other Slavonic people. Under it the land belongs to the inhabitants in common, and is assigned to each, according to his working capacity, for a stated period. This and other matters of joint interest are decided by a village assembly. In some features the mir resembles the manor. See Manor; Village Community. *Pron.* Meer.

Mira. In astronomy, the name given to the first known variable star. Discovered by David Fabricius, 1596, who announced it as a new star, it fluctuates in brightness from the second to the ninth magnitude during a period of about 332 days. Neither the maximum and minimum brightness nor the period are constant, and the causes for the changes are unknown. Spectroscopic examination has established that the change is a physical one confined to the star itself and probably not due to the regular eclipse of a dark companion. The star is also known under the name Omicron Ceti. See Stars.

Mirabeau, ANDRÉ BONIFACE LOUIS RIQUETI, VICOMTE DE (1754-92). French politician. A brother of Gabriel Honoré de Mirabeau, he was born at Bignon, Nov. 30, 1754, and became an officer of dragons. He served in the American War of Independence—85, became colonel of the regiment of



Vicomte de Mirabeau, French politician

Touraine, 1788, and was deputy for the noblesse of Limoges to the States-General in 1789. He was a vehement opponent of reform and of his brother's policy, and from his figure and hard-drinking habits was popularly known as Mirabeau-Tonneau (*i.e.* Barrel Mirabeau). After his attempt to suppress an insurrection in his regiment at Perpignan in June, 1790, he was arrested, but on his release shortly afterwards joined the emigrés in the Rhineland. He died at Freiburg im Breisgau. Consult *Le Vicomte de Mirabeau* (Mirabeau-Tonneau), E. Berger, 1904.

Mirabeau, GABRIEL HONORÉ RIQUETI, COMTE DE (1749-91). French statesman. He was born March 9, 1749, and as a young man he distinguished himself as a reckless rebel against all social and moral conventions. An aristocrat by birth, he sprang at once into the leadership of the Third Estate, when the States-General met on May 5, 1789. Under his leadership the Third Estate refused to allow itself to be adjourned. But there were few round him who could grasp the ideal for which he was striving—a strong constitutional government, free alike from the incubus of aristocratic privileges and from the anarchy of uneducated democracy.

His efforts to break down the prejudices of the Monarchists and to open the eyes of formal Constitutionalists to the realities of the situation failed, and only caused him to lose popularity with what was rapidly becoming the party of reckless revolution. He could not win the confidence of the king and queen, who under his guidance would themselves have become

the champions and the directors of the reforms by which alone the revolution could conceivably have been averted. At the beginning of 1790, he was still hoping that a new assembly might become the instrument of his aims; but the strain of the gigantic task which, almost unaided, he had taken upon his own shoulders was too great for him, and on April 2, 1791, he died. See *French Revolution*; *National Assembly*. *Pron.* Meerabo.

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Mirabeau, VICTOR RIQUETI, MARQUIS DE (1715-89). French economist. Of Provençal descent,

he was born at Pertuis (Vaucluse dept.), Oct. 5, 1715, and served in his youth as an officer in the army. From about 1743 he devoted his attention to economic ques-

tions, being a follower of Quesnay (*q.v.*), and notable among the so-called physiocratic school of economists. Among his publications were his popular *L'Ami des Hommes*, 1750-60; *Théorie de l'Impôt*, 1760, for which he suffered a short term of imprisonment; *Les Économiques*, 1769-72; and *La Science*, 1774. A man of extravagant tastes and fiery passions, the marquis, famed as a political writer, was no less notorious for his quarrels with his wife, Marie de Vassan, and with his son Gabriel Honoré (*q.v.*). He died at Argenteuil on July 13, 1789. See *Les Mirabeau*, L. de Loménie, 2 vols., 1879.

Mirabilis OR MARVEL OF PERU. Genus of perennial plants, of the natural order, Nyctaginaceae, natives of tropical America. The flowers are yellow and red, sweet scented, and bloom from May till Oct. Readily raised from seed, and often treated as half-hardy annuals, they flourish best in light soil.

Miracle (Lat. *miraculum*, a marvel.) Event transcending the known laws of nature. As God transcends nature, though immanent in it, all His activity may be regarded as supernatural; but it is convenient to use the term, in a narrower sense, for all those actions of God in nature which do not conform to the order of nature as it is known

in common experience, confirmed by scientific observation, experiment and induction. Whether there is, or is not such action, is a question of evidence; but here we are concerned only with defining a conception as exactly as language will allow.

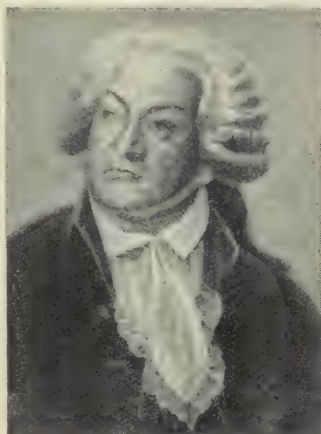
A miracle is a supernatural act of God in this narrower sense of the term. God may be thought of as acting supernaturally, either in the soul of man, or in the world around. Although the word miracle is sometimes applied to such an inward experience as conversion, it is convenient to confine the term to an outward event. The miracle has been described by some theologians of a supernaturalist type, whose aim was to oppose revelation to reason and religion to science, as an act of God contrary to the order of nature, a violation of natural laws, and an interference with natural forces.

But more sober theologians have been careful to explain that a miracle need not be contrary to the natural order, although it may be inexplicable by that order in so far as we have knowledge of it; and some of them even have maintained that it may be an occasional manifestation in that natural order of a vaster and greater order, which as a whole is now inaccessible to our senses or our reason. The negative aspect of miracle is that it is inexplicable by our present knowledge of nature; and the positive aspect is that, owing to its close connexion with God's self-revelation in inspired persons, it is to be regarded as God's act, not contrary to, and yet not conformable with, that wider activity of God, which theism recognizes in the whole order of nature.

Only a deistic conception of God's relation to nature, which places God not only above but even outside of nature as a self-enclosed system, can exclude the possibility of miracle. A theistic conception which represents God as no less immanent than transcendent, no less in and through than above and beyond nature, may distinguish two



Marquis de Mirabeau,
French economist



Mirabeau

From a portrait at Versailles



Mirabilis. Foliage and flowers of
the tropical American plant

modes of divine activity, and may describe them, in developing an analogy between God and man, as habitual and original. Just as a man may in most of the affairs of life and business follow a routine, and yet, when the occasion demands it, may show, even to the surprise of those who know him best, a fresh activity to meet a new emergency, so may God be conceived as acting generally in the fixed order of nature, but exceptionally departing from that order, not to disturb it, or destroy it, but to meet demands of His wisdom and goodness that it could not fully satisfy.

Purposes of Miracles

The analogy may take us a step farther. If a man is fulfilling a purpose for himself or others that falls beyond and above the ordinary occupations of his life, it may be necessary for him more frequently to depart from his usual habits. If God is fulfilling a purpose of self-revelation in truth and grace for the redemption of man from sin and its consequences in this world, it may be in like manner necessary that He should act in ways that do not conform to His ordinary working in nature. We should with reason suspect an alleged miracle that had no connexion with, and served no recognizable purpose of, God.

Further, as in putting right something in his own affairs or those of others which has gone seriously wrong, a man may be forced to act very differently from the way in which he would have acted otherwise, so sin with its consequences may be regarded as so serious a disturbance in God's world that very drastic measures for its removal may be necessary. A revelation of God which was intended to convey to man a more adequate knowledge of God than the world can supply, and a redemption of man which aimed at delivering man from sin as nature could not, might altogether reasonably be expected to reach beyond nature's bounds in the means it used, and to draw more directly from the unexhausted resources of God. As belonging then to the divine revelation and human redemption in Christ, miracles become both intelligible and credible. Their possibility is certain, their necessity probable, and we can approach the question of their actuality without any hostile bias.

Against Hume's contention that a miracle *per se* is so incredible that we must regard all evidence in favour of miracles as untrustworthy, we may set the considerations which have just been offered. His bold assertion "it is contrary to experience that a miracle should

be true," is an irrelevant truism, if what he means is experience generally, as the very conception of miracle assumes that miracle is not an ordinary event, and it is a reckless begging of the question if he means *all* experience without any exception, since even Mill admits that there is "a certain amount of positive evidence in favour of miracles." His demand that the testimony should "be of such a kind that its falsehood would be more miraculous than the fact which it endeavours to establish," may be met by insisting that it is less improbable that miracles should occur than that the Christian religion should rest on the shifting sand of credulous superstition, and that the Gospel records should be a tissue of falsehood.

About the miracles recorded in the O.T. Christian faith is not first of all, or most of all, concerned. If the miracles of Jesus are not adequately attested, the evidence in the O.T. will still less bear close scrutiny. If the miracles of Jesus are intelligible and credible, the O.T. records can be examined without any prejudice. Harnack in his book *What is Christianity?* (p. 18) seeks against an extreme scepticism to defend the trustworthiness of the Gospels by admitting the healing ministry of Jesus, and accounting for the cures regarded as miraculous by the mysterious power which one personality can exercise over others in certain abnormal nervous conditions, what Matthew Arnold called moral therapeutics.

Interpretation by Science

As modern medical science fully acknowledges, faith in the healer is in such nervous disorders a real cause of cure. A medical writer, Dr. R. J. Ryle, has, however, shown in an article in the *Hibbert Journal*, on *The Neurotic Theory of the Miracles of Healing* (vol. v, p. 585), that very many even of the healing miracles cannot be regarded as falling into the class of diseases capable of such treatment. The nature miracles remain unexplained.

Harnack further justifies his rejection of miracles by insisting on the credulity of the age in respect of such extraordinary occurrences, and the absence of the modern scientific conception of the uniformity of nature. Apart from the records of miracles, the Gospels give the impression of writings in which truth of fact as well as truth of thought and life is valued, and in which the intention to record only what is true is honestly carried out. If the evangelists had been as credulous as is suggested, we should have had not only a greater number of miracles, but the records would

have been of an extravagant character, not marked by the reserve and sobriety which we do find. See *Incarnation*; *Jesus Christ*; *Resurrection*; consult also *Bampton Lectures on Miracles*, J. B. Mozley, 1865; *Miracles in the N.T.*, J. M. Thompson, 1911; *Miracles*, W. Lock, 1911; *The Miracles of Jesus*, E. O. Davies, 1913.

ALFRED E. GARVIE

Miracle Play. Type of medieval religious drama, usually drawn from the legends of the saints. It cannot be strictly distinguished from the mystery play. The Latin comedies of Hroswitha (*q.v.*), based on legends of the saints, afford an early example. Miracle plays were from the first less associated with worship than the mysteries, and were usually acted—at first in Latin—by young clerics, boys, and even girls, on the eve of the saint's day. The earliest dramatic performance on record in England was a play of S. Katherine, written for his pupils by Geffrei, a Norman schoolmaster at Dunstable, about 1100. Miracles were frequently acted in London about 1170. There are but scanty remains of English plays of this type, which appears to have been much less popular than the mystery. The Christmas play of S. George, still acted by boys in English villages, is a degenerate survival. The Cornish Life of S. Meriasek is of Breton origin.

Many French miracle plays are extant. Thirteenth century examples are *Ruteboeuf's Theophilus*, and the S. Nicholas of Jean Bodel of Arras. There is a collection of 40 miracles of the Virgin of the 14th century. These early plays are far more concise and dramatic than the unwieldy mystery plays of the 15th century, but resemble them in the introduction of comic relief. There are also German and Italian miracle plays. The Persian religious drama of Hasan and Hosain, still often performed, presents close analogies to the miracle play. See *Drama*; *Morality*; *Mystery Play*; consult also *English Dramatic Literature*, vol. 1, A. W. Ward, 1875; *English Miracle Plays*, a collection edited by A. W. Pollard, 1890; *English Religious Drama*, K. L. Bates, 1893; *The Mediaeval Stage*, E. K. Chambers, 2 vols., 1903; *English Miracle Plays*, E. H. Moore, 1907.

Mirage. Optical illusion produced by reflection and refraction when successive layers of air have different temperatures, and, in consequence, different densities. The most perfect mirages are seen in deserts and on the sea. In the

former, plains often look like lakes, whilst on the sea inverted images of ships are frequently seen.

The phenomenon is explained by the fact that, when a ray of light passes from any one medium into another, as from air into water, it is bent through an angle. If, therefore, a ray passes through a succession of layers of air which differ continuously in density, the path of the ray becomes a curve. The air is of greater density near the earth than at an altitude, and when, to this permanent variation there are added the incidental variations caused by the ascent of heated air from desert sands or mountain valleys, and the downflowing of cold currents of air from heights, abnormalities of visibility arise, and mirages are seen.

In Mesopotamia, for example, the heated air near the surface of the sand expands, and the refractive index or bending power of the lowest layer of the atmosphere becomes small. The ordinary state of things is reversed. The density for some distance increases with height instead of decreasing. At some point above the surface, however, normal conditions reassert themselves, and the density and the bending power decrease again. Consequently any object viewed through this abnormal atmosphere is seen by two sets of light rays, one of which passes near the earth in a convex curve to the horizon, and the other higher up and concave to the horizon. Thus the object appears as if its image were mirrored in the sand. See Light; Optics.

Miraj. Native states and town of Bombay, India, in the Karnatic group. The two states are called senior and junior. Miraj senior covers 343 sq. m., and has a pop. of 81,000; the junior state, area 211 sq. m., and pop. 37,000. The town lies near the Krishna on the rly. from Poona to Belgaum, and is the junction of the branch line to Kolhapur. Pop. 22,000.

Miramichi. River of New Brunswick, Canada. It rises near the centre of the prov. and flows N.E. to its outlet in Miramichi Bay, Gulf of St. Lawrence. Its chief tributaries are Little South West Miramichi, North West Miramichi, and Cain. All the streams are noted for their salmon fisheries. Length 220 m., of which 55 m. are navigable for small vessels, and 15 m. tidal.

Miramichi Bay. Indentation on the coast of New Brunswick, Canada. It is one of the largest arms of the Gulf of St. Lawrence, and receives the waters of the Miramichi river. Fox, Passage, and Néguaac are three long narrow

islands which form an almost perfect barrier in a curve across the mouth of the bay.

Miranda. Maritime state in N. Venezuela, fronting the Caribbean Sea. It is mountainous in the N., but other parts are extremely fertile, containing some of the best coffee-growing districts in the republic. The capital is Ocumare. Area, 3,068 sq. m. Pop. 176,000.

Miranda. Character in Shakespeare's comedy *The Tempest* (q.v.). Daughter of Prospero, the exiled duke of Milan, she lives with him on his island until she is sixteen, when, falling in love with Ferdinand, whom her father's storm has landed on the island, she becomes the instrument of Prospero's reconciliation with Ferdinand's father Alonso, king of Naples, the author of his exile.

Miranda, FRANCISCO ANTONIO GABRIEL (1756–1816). Venezuelan patriot. Born at Caracas, June 9,

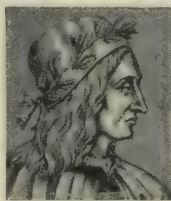


Francisco Miranda,
Venezuelan patriot
From a bust

1756, he went to Spain as a youth and entered the Spanish army, taking part in the U.S. War of Independence, 1778. After a visit to Russia he repaired to France, entered the Republican army, and fought against Prussia, 1792–93. During the Terror he fled to England, where he tried to interest Pitt and Lord Sidmouth in his schemes for liberating Venezuela from the Spanish yoke, 1797–1804. After an ineffectual attempt to organize a rising in 1806, he landed again in South America in 1810, was everywhere successful, and the following year Venezuela declared her independence. He was made commander-in-chief and dictator, but the following year serious dissensions arose; Miranda was defeated, handed over to the Spaniards, and after five years in prison in Cadiz, died July 14, 1816.

Mirandola. City of Italy, in the prov. of Modena. It is 20 m. by rly. N.N.E. of Modena. The cathedral and communal palace date from the 16th century. The ruined castle of the Pico family, owners of Mirandola from the 14th century to the 18th, the churches of S. Francis and Jesus, and various antiquated buildings give it a picturesque appearance. Trade is carried on in rice and silk. Pop. 14,000.

Mirandola, GIOVANNI PICO DELLA (1463–94). Italian humanist and philosopher. Born Feb. 24,



Pico della Mirandola,
Italian philosopher

1463, a member of a well-known family, which owned an estate at Mirandola, near Modena, he was considered one of the chief orators and poets of the time when only ten years old. He is said to have been master of 20 languages, and endeavoured to reconcile Platonism with Aristotelianism and Christianity. In 1486 he appeared in Rome and declared himself ready to defend in public 900 theses *De omni re scibili* (Concerning everything that can be known). Some of the theses were condemned as heretical, and Mirandola retired to Florence, where he died Nov. 17, 1494. See *The Renaissance: Studies in Art and Poetry*, W. Pater, 1910.

Miraumont. Village of France, in the dept. of Somme. Situated on the R. Ancre, 7 m. N.E. of Albert, it was one of the key-positions on the German front in Picardy. Captured by the British, Feb. 25, 1917, it was recovered by the Germans in March, 1918, and finally taken by the British 42nd div. Aug. 24, 1918. The village has been "adopted" by Burnley. See *Ancre, Battle of the: Somme, Battles of the*.

Mirbach, COUNT ALFRED (1872–1918). German diplomatist. Born at Munich, June 3, 1872, he entered the German diplomatic service, and was employed in Paris, Vienna, and St. Petersburg. In Jan., 1918, on the establishment of the Soviet régime in Russia, he was sent to Petrograd to conduct negotiations respecting the transfer of prisoners of war. After the conclusion of the Brest-Litovsk treaty he became German envoy at Moscow, where he was murdered, July 7, 1918. See *Brest-Litovsk, Treaty of*.



Alfred Mirbach,
German diplomatist

Mircea (d. 1418). Prince of Wallachia, 1387–1418. Son of Radu II, he succeeded his brother as voivode and did homage to the king of Poland, 1389, and to the Turks in 1391. Notwithstanding this he was banished by the latter, and allying himself to Sigismund of Hungary in 1395, was defeated with him by the Turkish army of

Bayazid I at Nicopolis, 1396. A supporter of Musa in his struggle for the Turkish crown after the capture of Bayazid I by Timur in 1402, Mircea regained his power in Wallachia, but thereafter continued to pay tribute to Turkey.

Mirdites. Tribe of N. Albania. They number about 25,000 and inhabit the mountainous region to the S.E. of Scutari, with their chief centre at Oroshi. Their territory is called Mirdita. Of the several tribes of N. Albania they are politically and numerically the chief. Backward in culture and in religion Roman Catholic, they have always opposed Turkish and other attempts to absorb them. They have hereditary chiefs known as capidans, descended from the house of John Marco. In 1868, when Prenk, son and successor of Bib Doda, the late reigning chief, was captured by the Turks and held as a hostage, the Mirdites refused to supply men to the Turkish army. The Turks after some time released Prenk, who as the result of his double-dealing with them involved his tribesmen in conflict with Turkey. The latter dispatched two punitive expeditions which ravaged their territory.

Prenk was captured by the Turks in 1880 and banished. In his stead another chief belonging to the ruling family was chosen, but his unpopular rule brought about anarchy. Prenk ultimately returned, but was assassinated in 1919. See Albania.

Mirfield. Urban dist. of Yorkshire (W.R.). It stands on the Calder, 5 m. from Huddersfield, with stations on the L. & Y. and L. & N.W. Rlys. The chief building is S. Mary's Church, a modern edifice embodying the tower of an older one. An industrial centre, Mirfield has manufactures of woollen and cotton goods, while occupation is also found in the surrounding coal mines. Water is supplied by the Huddersfield corporation. Market day, Sat. Pop. 11,700.

Mirfield Community. Anglican religious order for priests, known as the Community of the Resurrection. Founded in 1892 at the Pusey House, by Dr. Gore, afterwards bishop of Oxford, the community removed to Radley in 1893, and in 1898 to Mirfield in Yorkshire. Its members are occupied in mission preaching, holding retreats, training candidates for Holy Orders, and literary work. Buildings have been erected for the purposes of a theological college, where a large number of

men are trained for the ministry, the course occupying five or six years and including a degree in arts at Leeds University, where the society maintains a hostel. The charge is low, and repayment may be spread over six years after ordination. Half the cost of training is borne by the society. In 1903 a branch house was opened at Johannesburg. A branch priory has been established in London since 1914.

Miriti Palm (*Mauritia flexuosa*). Large tree of the natural order Palmae, native of S. America. The enormous leaves are fan-shaped, forming a huge crown to the lofty trunk. The fruits have a tessellated appearance due to a covering of hard, shining scales. From the young fruits a beverage is prepared, and the sap, fermented, becomes palmwine. A sago-like food is yielded by the soft inner part of the stem; and the young leaves torn into strips are twisted into string and cordage.

Mirror. An object with a smooth or polished reflecting surface for the purpose of producing



Miriti Palm Tree. Inset, left, flower spray; right, frond of leaf

images of other objects, or for reflecting light and heat. Mirrors of polished bronze were used by the Egyptians, Greeks, and Romans. Praxiteles (328 B.C.) suggested polished silver plates as the best reflecting surface. Silver, steel, and aluminium have been employed for this purpose. Glass was first used in Venice about 1300, first as a protective sheet to burnished silver plates, and then backed with mercury. A sheet of tinfoil was placed on the glass, and over this a coating of quicksilver, which formed an adhesive amalgam, protected by a coat of paint and varnish.

The modern method, introduced by Liebig in 1830, is to precipitate an ammoniacal solution of silver salt, to which tartaric acid and sugar candy are added, on glass, and finish off with a coat of paint and varnish. Mirrors were first manufactured in England in 1673, and were small. About the time of Queen Anne they were made of heavy plate glass with bevelled edges. The surface of mirrors may be plane, convex, concave (as in pyrometers), or parabolic. See Celt; Japan; Optics; Telescope.

Mirror Iron. Alloy of iron, manganese, and carbon. It is used in the manufacture of steel, being added at the end of the conversion process to remove any oxygen which the metal may have taken up, and to provide the exact amount of carbon required in the finished product. It is prepared in



Mirror. Illustrations showing similarity of form in ancient and modern hand mirrors. 1. Ancient Greek, engraved with representation of Perseus bearing the head of Medusa. 2. Egyptian bronze mirror. 3. Modern tortoiseshell mirror

1 & 2, British Museum; 3, by courtesy of Goldsmiths & Silversmiths Company



Mirfield seal

the same manner as ferro-manganese, and is called mirror-iron because its brilliant faces suggest small mirrors, when the metal is broken. See Bessemer Process; Siemens Process; Steel.

Mirza. Persian title. After the name, it denotes a prince; before the name, it is the usual title for officials and scholars. The vision of Mirza is the title of one of Addison's best-known Spectator essays.

Mirzapur. Dist. and town of India, in the United Provinces, in the Benares division. The dist. lies mostly S. of the Ganges and includes part of the Son valley and part of the N. face of the Deccan plateau. Rice, wheat, and millet are the chief crops. The town is situated on the Ganges, about midway between Allahabad and Benares, is a grain and cotton market, and manufactures shellac. There

Larceny Acts. One form of misappropriation, however, is not larceny, though it is a crime punishable by imprisonment; and that is where a servant gives his master's corn, hay, etc., to the master's horses, etc., without the master's authority (Misappropriation by Servants Act, 1863). The object of this statute is to prevent a servant who has stolen his master's corn, etc., from saying, "I gave it to the horses under my charge."

Miscarriage. Expulsion of the foetus or immature offspring before the end of the 28th week of pregnancy. After that date the term "premature labour" is employed if the delivery occurs before the full time. Some authorities employ the term abortion for expulsion of the foetus before quickening has occurred, and miscarriage for expulsion after that date; but for

forming the W. side of the Gulf of Pozzuoli, about 10 m. W. of Naples. It terminates in Cape Miseno, and contains the village so-named, which stands near the site of the ancient Misenum. Porto di Miseno, the fine natural harbour on the N., and that called Mare Morto on the N.E., were formed about 30 B.C., into a great naval station for the Roman fleet. Remains of moles, a theatre and baths, etc. exist. Tiberius died here. Misenum was pillaged and destroyed by the Saracens in 890.

Miserere. The Latin title and the first word of Psalm li. (Eng. Have mercy), one of the seven penitential psalms (in the vulgate, Ps. l.). In the Book of Common Prayer it is said kneeling at the Communion service.

Miserere, MISERICORD OR PATIENCE. In ecclesiastical architecture, a hinged seat of a stall



Miserere in Henry VII's Chapel, Westminster Abbey. The carving depicts the Judgement of Solomon; the left group represents the women contending over the live child; on the right is seen the mother of the dead child substituting her baby for the living one; in the centre is Solomon on his throne delivering judgement

are fine bathing ghats. Only a quarter of the total area is cultivated. Dist., area 5,233 sq. m.; pop. 1,071,000. Town, pop. 32,300.

Misanthrope, LE. Five-act comedy by Molière, produced at the Palais-Royal, Paris, June 4, 1666. Its slender plot concerns the unsuccessful suit of the misanthropic Alceste for the hand of the worldly-minded but not wholly unlovable Célimène. While reflecting the essential barbarism of the court life of the period, it touches deep veins of human interest, and is usually regarded as Molière's greatest work, though not the most popular of his comedies. Alceste was acted by Molière; Célimène by his wife. *Le Misanthrope* provided the groundwork for Wycherley's *The Plain Dealer*, 1674.

Misappropriation. In English law, wrongful conversion to their own use, by trustees or other persons, of property entrusted to their care. This is a form of larceny, and is punishable under the

legal purposes this distinction is not recognized. See Abortion.

Mischabel. Mountain mass of the Pennine Alps (*q.v.*) in the canton of Valais, Switzerland. It lies between Monte Rosa and Visp, and two of its peaks, the Dom and the Taeschhorn, rise to 14,941 ft. and 14,758 ft. respectively. The Mischabel Joch is a pass between the latter mountain and Alphubel, leading from Zermatt to Fee at an alt. of 12,650 ft.

Misdemeanour. In English law, a crime punishable on indictment which is not a felony. There is no distinction of principle; because a felony is not necessarily more serious in itself than a misdemeanour. Thus, larceny is a felony, while perjury is only a misdemeanour. A conviction for a misdemeanour never involved forfeiture of land or goods, as a conviction for felony did.

Miseno (anc. Misenum Promontorium). Volcanic peninsula of Italy, in the prov. of Naples,

in church, which can be lifted and leant against the back of the stall. On its under side is a bracket which provides a higher rest for the occupant of the stall. This feature was introduced for the benefit of aged ecclesiastics who might be fatigued by long standing. The under-bracket is often finely carved, as in the misereres of Henry VII's chapel, Westminster Abbey.

Misericordia OR BROTHERS OF MERCY. Guild or brotherhood of laymen, founded at Florence in 1244 for the purpose of providing decent burial for the poor. The brothers undertook the entire cost and arrangements of the funerals, acting themselves as bearers. They rendered very valuable services during the epidemic of plague in 1348-49; and they adopted a kind of monastic garb with a hood covering all the face except the eyes, lest they should be recognized and rewarded. See Italy; Monasticism.

Misery. Village of France, in the dept. of Somme, 4 m. N.E. of Chaulnes (*q.v.*). The Germans in their retreat to the Hindenburg line, March, 1917, burnt it and the neighbouring village of Marchélepot, before yielding it up to the Allies, and retook it in their offensive a year later, when critical fighting took place, the gap caused by the retreating Allies leading to the capture by the enemy of Nesle. See Somme, Battles of the.

Mishawaka. City of Indiana, U.S.A., in St. Joseph co. On the St. Joseph river, 78 m. E.S.E. of Chicago, it is served by the Lake Shore and Michigan Southern and the Grand Trunk rlys. It has manufactures of rubber articles, motor vehicles, machine-shop products, etc., and trades in agricultural produce. Settled in 1828, it was incorporated as a village in 1834 as St. Joseph Iron Works, and received its present name in 1838. Pop. 15,200.

Mishich, ZIVOYIN (1855-1921). Serbian soldier. The son of Radovan Mishich, a peasant, he



Zivoyin Mishich,
Serbian soldier

was born at Struganik, near Valievo, July 7, 1855, and entered the Military Academy, Belgrade, in 1874. He joined the Serbian army as lieutenant of infantry, 1876, and fought in the Serbo-Turkish Wars of 1876 and 1877-78, taking part also in the war against Bulgaria, 1885-86. Later he became professor of strategy at the superior military college, Belgrade. A colonel in 1901, he was a general in 1912, and was chief of the general staff, under Putnik, during the Balkan Wars, 1912-13.

At the outset of the Great War Mishich was in command of the Serbian second army, and played a distinguished part in the defeat of the Austrian invasions, 1914-15, being made a field-marshal (*voivode*) in 1914. He commanded the Serbian second army during the great retreat, 1915, and in 1916 he was at the head of the resuscitated Serbian second army, when the success of his operations in the Tchernia Bend, by which Monastir was outflanked from the E., led to the capture of that city by the Allies. In Sept., 1918, he was one of the Serbian commanders in the great offensive that resulted in the overthrow of Bulgaria. Among his numerous honours were G.C.M.G. and K.C.B. He died Jan. 20, 1921.

Mishmi. Aboriginal hill-tribe in the N.E. corner of the Brahmaputra valley, Assam. Numbering (1911) 271, they may represent an ancient offshoot from the Miao of S. China, and are remarkable for their peculiar religion and customs.

Mishna (Heb., teaching). Jewish code embodying the oral law. A collection of rabbinical teaching and interpretations of the Mosaic law, the Mishna was compiled and edited in its present form by Rabbi Jehudah el Nasi, c. A.D. 200. Divided into six parts dealing respectively with agriculture, Sabbatical observance, marriage, civil law, sacrifices, and the various unclean and clean things, the Mishna, long handed down orally, is written in late Hebrew. Further commentaries on the Mishna and the Mosaic law were embodied in a supplementary work called the Gemara, the two forming together the Talmud (*q.v.*). The Mishna was first printed in 1492 and has been translated and published in most modern languages spoken by Jews.

Misilmeri (Arab. *Menzil el-Emir*, quarters of the prince). Town of Sicily, in the prov. of Palermo. It stands at the base of a castle-crowned eminence, 10 m. by rly. S.E. of Palermo. Pop. 13,000.

Misiones. Territory in the N.E. of Argentina, stretching N.E. between Paraguay and Brazil. It is watered by the Paraná and the Uruguay with their tributaries. The Paraná flows along the Paraguayan frontier, the Uruguay dividing it from Brazil. Mainly hilly and forest-covered, maté, timber, tobacco, sugar, cereals, and fruits are grown, and cattle are reared. In the 17th century the Jesuits founded many mission settlements in this region, which were mainly peopled by converted Indians. The chief town is Posadas on the Paraná. Area, 11,511 sq. m. Pop. 54,000.

Miskolcz. Town of Hungary. It is situated on the Sajo on the edge of the Carpathian foothills, 116 m. by rly. from Budapest. The Calvinist church of S. Stephen dates from the 13th century. There is a considerable trade in wheat, wine, and cattle. Flour-milling, pottery and porcelain manufactures; and shoe-making are the main industries. A fifth of the inhabitants are Jews and a quarter Calvinists. Pop. 51,000.

Mispickel OR ARSENICAL PYRITES. One of the ores of arsenic. The latter is obtained by heating the ore in earthenware cylinders fitted with iron receivers. Mispickel is found in Cornwall, Germany, N. America, etc. See Arsenic.



Mishmi. Left, a chieftain of the tribe; right, girl wearing bamboo plugs to distend the lobes of the ears

Misprision (old Fr. *mes*, badly; late Lat. *prensio*, taking). Term originally meaning a mistake, in English law neglect of duty. The two chief kinds of misprision are misprision of treason and of felony. These offences are committed by knowing of treason or felony and concealing the same. If there is more than mere knowledge, i.e. if there is assent to the treason, the assessor is guilty of substantive treason; and if there is assent to the felony, he is liable as an accessory before or after the fact. In addition to misprision of treason and felony, certain offences in the nature of contempts and high misdemeanours rank as misprisings. If a secretary of state or other high executive officer is guilty of maladministration, as Strafford was, the articles of impeachment describe his offences as high crimes, misdemeanours, and misprisings. The term is also used to describe certain offences which rank as contempt of court, as advising a witness not to give evidence.

Misrata. Coastal city in Tripolitania, N. Africa. It consists of a large oasis, about 10 m. by 4 m., with 5,000 gardens, and is situated on the coastal caravan route to Homs and Tripoli. It was occupied by the Italians on July 8, 1912. Pop. 10,000.

Misrepresentation. In English law, a false statement of fact, i.e. not of opinion. A transaction, such as a sale induced by a misrepresentation of a material fact, is voidable, i.e. can be repudiated by the party deceived, if he repudiates it as soon as he discovers the falsity of the statement, and if it is possible to put the parties in the same position as before. No action will

lie for damages for misrepresentation unless the statement was either made fraudulently, with knowledge of its falsity, or was a warranty.

Missal OR **MASS-BOOK**. Office book of the R.C. Church. It contains the service for Mass throughout the year. Revised and printed under Pius V, when the Council of Trent, 1570, ordered its use in all churches that could not claim uses of their own of 200 years' standing, it was again revised in 1604 and 1634. Of the nine service books used by the Church of England before the Reformation, that known as the missal was in four parts: the antiphony or gradual, containing parts to be sung by the choir at high mass; the lectionary, or book of the epistles; the evangelistarium, or book of the Gospels; and the sacramentary, containing the prayers. The first mention of a missal is found in the 8th century. A plenary missal for use of priests appeared in the 11th or 12th century. There are various missals for different rites or uses, Ambrosian, Sarum, Hereford, Lincoln, York, Bangor, etc. See Prayer Book.

Missel Thrush OR **MISTLE THRUSH** (*Turdus viscivorus*). Common British song-bird. Nearly re-



Missel Thrush, a common song-bird of the British hedgerows

By courtesy of Macmillan & Co.

lated to the song thrush, but distinguished from it by its larger size, greyer colour, more prominent spots on the under parts, and the greyish white tips to the lateral tail feathers, it is the largest of the British song-birds and is most abundant in Ireland. In the N. of Scotland it is rather rare. Its song is most notable in the winter, especially in wet weather, giving it its local name of stormcock. It nests in trees early in the spring, and two or even three broods are reared in the season. It feeds on worms, grubs, snails, insects, and the berries of many plants, particularly the mistletoe, whence its name. See Eggs, colour plate.

Missenden, GREAT AND LITTLE. Two parishes and villages, Buckinghamshire, England. They lie 9 m. S. by E. of Aylesbury, on the Met. and G.C. Rlys. Missenden Abbey, a seat at Great Missenden, embraces the cloisters of the 12th cent. abbey. Pop., Gt. 2,600, Lit. 1,300.

MISSIONS: A CHRISTIAN ACTIVITY

J. H. Oldham, Editor, *The International Review of Missions*

In connexion with this subject see the articles on the various Christian denominations, e.g. Baptists; Church of England; Congregationalism; Wesleyan Methodists, etc. See also biographies of Carey; Chalmers, Livingstone, and other missionaries

The word mission (Lat. *mittere*, to send) refers in a general sense to a body of persons sent on an errand. It is thus used for those sent to represent their country abroad, e.g. the British mission in China, and for persons sent for a particular purpose and for a short time. In the plural, however, it is used almost solely for bodies of men and women sent by religious organizations to work among the unconverted. Such missions are often divided into home and foreign, but it is the latter which forms a special chapter in the history of the Christian Church. There are also missions, in the same sense, sent out by Mahomedans, Buddhists, and others.

Missions and the Crusades

The history of Christian missions falls into two periods. The first was from the Apostolic age until about A.D. 1100, when most of Europe was Christian except remote regions in the N.E., and the Mahomedan part of Spain. The Crusades tended to replace missions by attempts to convert the heathen and Moslems by the sword, a process ruthlessly carried on in Prussia, Lithuania, Esthonia, etc., and missionary work languished, though it never ceased.

The second period began with the era of exploration and European expansion that opened in the latter part of the 15th century, when missionaries, mainly Franciscan and Dominican, accompanied the Spanish and Portuguese expeditions. The Society of Jesus, founded in 1534, was from the first a missionary order, including among its original members Francis Xavier (1506-52), the ardent apostle of India and the Far East. Considerable successes were achieved in the 17th century in India, China, Japan, Indo-China, the Philippines, where the entire population became nominally Christian, in parts of Africa, and in N. and S. America, but much of the work was superficial. The 18th century witnessed a slackening in most of the mission fields, and it was not until the second quarter of the 19th century that a new missionary expansion of the Roman Catholic Church began.

The leaders of the Protestant Reformation were too much preoccupied with controversies at home to undertake missionary effort abroad, and as authority

over the lands discovered by the explorers was committed by the pope to Spain and Portugal, these territories were closed to Protestant missions. It is nevertheless remarkable that not only were the leaders of the Reformation indifferent to the claims of the non-Christian world, but the leading theologians explicitly denied the missionary obligation. In the 17th century the Dutch East India Co. was enjoined by its charter to care for the conversion of the heathen, and the efforts of its preachers met with some success in Ceylon and the Malay Archipelago, though the work was mostly perfunctory.

The labours of John Eliot on behalf of the American Indians were an expression of the pure missionary spirit, of which the times afford no other outstanding example. In Great Britain the Society for Promoting Christian Knowledge was founded in 1698 and the Society for the Propagation of the Gospel in 1701, but no important work among non-Christians was initiated by either society. In the 18th cent. the two outstanding missionary efforts were the Danish Mission in India inspired by the Pietist movement in Germany under Hermann August Francke of Halle, and associated with Ziegenbalg (1683-1719) and Schwartz (1726-98); and the work of Moravian missionaries, under the guidance and inspiration of Count von Zinzendorf (1700-60), among the negroes of the West Indies, the Greenlanders, the N. American Indians, and the Bushmen of S. Africa.

Wesleyan and Baptist Missions

The modern missionary movement had its beginnings in the closing years of the 18th century. The zeal of the early Methodists found expression in isolated efforts to reach the heathen, though the Wesleyan Methodist Missionary Society was not organized till 1813. The Baptist Missionary Society was founded in 1792 and William Carey went to India as its first missionary. The London Missionary Society was formed in 1795, the Church Missionary Society in 1799, and the British and Foreign Bible Society in 1804. From 1817 the Society for the Propagation of the Gospel began to take an active share in foreign missionary work. The first American missionary society, the American Board of Commissioners

for Foreign Missions, was established in 1810. All the larger Christian bodies in Europe and in North America in succession gave foreign missions a place among their recognized activities, and in 1916 it was estimated that more than 400 separate organizations in Europe, America, and Australasia were either directly engaged in foreign missionary work or contributing to its maintenance, while about a hundred organizations of various kinds had their headquarters in Asia and Africa.

The annual expenditure of the Protestant bodies in the different countries on foreign missionary work, including in the case of the U.S.A. expenditure on work in Latin America, before the Great War was, according to World Statistics of Christian Missions, roughly as follows: U.S.A. \$3,600,000; Great Britain, \$2,750,000; Canada, Australasia, and South Africa, \$400,000; Germany, \$420,000; other European countries, \$380,000. The total Protestant missionary force working among peoples not professing the Christian religion was in round figures 10,000 men and 6,500 unmarried women.

The World Missionary Conference held in Edinburgh in 1910 appointed an international and interdenominational committee for common consultation about missionary matters. The missionary societies in Great Britain and in North America are united in annual conferences in the two countries, and are acting together in an increasing number of matters. Similar interdenominational organizations representing the different missions have been formed in the principal mission fields of Asia. Many undertakings are carried on jointly by several missionary societies, such as the Women's Christian College in Madras, which is maintained by twelve separate societies, six being British, five American, and one Canadian.

The work of Roman Catholic missions is carried on by the Benedictines, Capuchins, Dominicans, Franciscans, and Jesuits, and by special societies, the largest of which is the Société des Missions Étrangères, with headquarters in Paris. The supreme control over these bodies is exercised by the pope through the Congregatio de Propaganda Fide, established at Rome in 1622, and they derive support partly from the funds belonging to the various orders and societies, and partly from such collecting societies as the Society for the Propagation of the Faith,

the receipts of which amounted in 1912 to \$322,000. According to Streit's *Atlas Hierarchicus*, published in 1913, there were engaged in missionary work among non-Christian peoples about 6,000 priests, 2,500 lay brothers, and nearly 7,000 sisters.

The results of Christian missions, so far as they can be indicated by statistics, are shown by the following figures of the number of baptized Christians in the principal mission fields:

| | Protestants | Roman Catholics |
|-----------------------|-------------|-----------------|
| Japan and Korea | 195,000 | 145,000 |
| China | 335,000 | 1,400,000 |
| India and Ceylon | 1,077,000 | 2,166,524 |
| Dutch East Indies | 139,000 | 37,000 |
| Africa and Madagascar | 1,100,000 | 873,000 |

Christian missions have been a powerful agency in the spread of education, and in promoting physical and social welfare. In China and in the Turkish Empire missionary schools and colleges have been the chief means of spreading western knowledge, and have exerted a far-reaching influence on the national life.

In India nearly one-quarter of the pupils in secondary schools and colleges are being taught in missionary institutions, and missionaries like Alexander Duff and William Miller are outstanding names in the history of Indian education. Throughout the greater part of the African continent native education has been almost entirely the work of Christian missionaries. They have also been mainly responsible for reducing to writing the numerous languages of Africa, and many languages in other parts of the world, and for the preparation of dictionaries, grammars, school-books, and literature in these languages. The whole Bible has been translated into about 140 different languages, and there are more than 500 other languages, in which at least one complete book of Scripture has been printed. More than 1,000 doctors and 500 nurses are included among Protestant missionaries, and more than 3,000,000 persons receive treatment annually in mission hospitals and dispensaries.

Bibliography. Outline of a History of Protestant Missions, G. Warneek, Eng. trans. G. Robson, 3rd ed. 1906; Reports of World Missionary Conference, 9 vols. 1910; *Atlas Hierarchicus* (Roman Catholic), C. Streit, 1913; History of Christian Missions, C. H. Robinson, 1915; Statistics of Christian Missions, 1916; Encyclopedia of Religion and Ethics (Article on Missions), ed. J. Hastings, 1918;

The Conversion of Europe, C. H. Robinson, 1918; International Review of Missions, pub. quarterly since 1912.

Mississippi. River of the U.S.A. It rises in Little Elk Lake, but Lake Itasca, Minnesota, 1,680 ft. alt., is generally regarded as its source. In its earlier course, marked by rapids and beautiful falls, it winds through a swampy country and forms many lakes. At Minneapolis, the head of its navigation for large ships, are the Falls of St. Anthony, where the river makes a descent of 80 ft. in half a mile. Nearly 80 m. below St. Paul it expands into the large and picturesque Pepin Lake, on the Wisconsin border, and from this point separates the states of Minnesota, Iowa, Missouri, Arkansas, and Louisiana on the W., and Wisconsin, Illinois, Kentucky Tennessee, and Mississippi on the E.

Rapids are met with at Rock Island, where the fall is 21 ft. Ship-canal have been constructed to help navigation. After a circuitous course, the Mississippi embouches into the Gulf of Mexico through many "bayous," the chief being the Atchafalaya and the Lafourche. Its length is about 2,460 m., but including its longest tributary, the Missouri, it measures 4,200 m., and is thus the longest river in the world; at its junction with the Missouri its breadth is 5,000 ft., and below New Orleans 2,475 ft. It receives many large tributaries, the more important being the Minnesota, Des Moines, Missouri, Arkansas, and Red from the W., and the Wisconsin, Illinois, Ohio, and Big Black from the E. Among the important towns on its banks are Minneapolis, St. Paul, Dubuque, Moline, Rock Island, Burlington, Quincy, St. Louis, Memphis, Vicksburg, and New Orleans.

The waters of the Mississippi have a gradual swell, which begins in Feb. and continues till June. They occasionally overflow the embankments and inundate the entire lower valley. The area originally subject to inundation was nearly 30,000 sq. m., but it has been largely reduced by a system of embankments (levees). The construction of these levees was begun early in the 18th century, and in 1916 the system, on which more than £27,000,000 has been expended, comprised about 1,500 m. About 95 m. below New Orleans the river divides into several outlets, the principal being the S.W. Pass, the S. Pass, and the N. Pass. By means of jetties, known as Eads jetties after the designer, the navigability of the



Mississippi. Map showing the river basin. Inset, the delta on the Gulf of Mexico

lower river has been considerably improved. These jetties, extending E. and W. of the S. Pass and measuring $4\frac{1}{2}$ m., have enabled a channel of 30 ft. to be obtained, thus greatly adding to the importance of New Orleans as a port.

The river was first visited by a European in the 16th century, but nothing was known of it until 1673, when two Jesuits, Louis Joliet and Jacques Marquette, sailed down it as far as the mouth of the Arkansas. La Salle, in 1681-82, went down as far as the river mouth. At that time it flowed through soil claimed by France, and Frenchmen made a number of settlements on its banks. After the treaty of 1763 its course was the joint property of Great Britain and France. Spain secured the rights previously held by France, while the U.S.A., by the treaty of 1783, obtained the British ones; there was trouble between these two countries about the navigation, but this was ended when Louisiana was purchased by the U.S.A. in 1803. In the 19th century the U.S.A. conducted a thorough survey of the river and its tributaries. See Bluff; Louisiana; River; consult also *Discovery of the Mississippi*, J. G. Shea, 2nd ed. 1903; *The Opening of the Mississippi*, F. A. Ogg, 1904.

Mississippi. State of the U.S.A. A south central state, it has a coast-line of 85 m. on that part of the Gulf of Mexico known as Mississippi Sound. Its area is 46,865 sq. m., of which 500 are water. The surface rarely exceeds

800 ft. in height, and falls away S. and W. to the rich alluvial lands of the Mississippi and Yazoo valleys, which are protected from floods by levees. These are known as the bottom lands, and of them there are 7,000 sq. m. in the delta of the Yazoo. The chief rivers are the Mississippi, which bounds it on the W., Pearl, Tombigbee, Yazoo, and Pascagoula. The state includes a number of islands.

A great amount of cotton is grown, and much maize. Other cereals are cultivated, and cattle, sheep, and pigs are reared; the sugar-cane is grown, and much land is under fruit. A considerable area is still forest, and produces a good deal of timber. There are some fisheries, but no great quantity of minerals. Jackson is the capital. Of the population of 1,790,000 more than half are negroes.

As part of Louisiana, Mississippi was first settled by French colonists, who made their homes in a land hitherto inhabited solely by Indian tribes. It passed to England in 1763, but in 1783 was formally ceded to Spain, that country having taken possession of it in 1781. A dispute soon arose about the boundary between the U.S.A. and the soil of Spain, the result being a treaty by which the future state was included in the U.S.A. The Spaniards vacated it in 1798, when it was made a territory.

In 1817 Mississippi was admitted to the Union as a state. A constitution was drawn up in that year, but the existing one dates from 1890. The state legislature con-

sists of a senate and a house of representatives, both elected for four years. The franchise is theoretically a democratic one, but there is an educational test designed to secure that the whites shall be dominant. The state sends two senators and eight representatives to Congress.

Mississippian. In geology, a group of limestone rocks which are well developed in the Mississippi Basin of the United States. A subdivision of the carboniferous system, their exact classification is still unsettled by geologists. *See* Carboniferous System.

Mississippi Scheme. Financial enterprise devised with the object of restoring the shaken credit of France. In 1715, when Philip of Orleans became regent, the finances of France were in an appalling condition; national bankruptcy was almost inevitable. It was then that John Law persuaded Orleans to approve his scheme and started a bank in France.

With this for a basis, Law acquired the sole right to trade in the vast region around the Mississippi which he called Louisiana, and in 1717 he founded a company for this purpose. Having turned his bank into a national institution with the guarantee of the state behind its notes, Law planned a much bigger concern. Two other trading companies were amalgamated with his, and under him a new *Compagnie des Indes* dominated practically the whole of France's foreign trade. With the issuing of new capital for its activities the gamble began. The shares rose rapidly in value, while the company purchased the right to manage the mint and to farm much of the national revenue. Finally the national debt was taken over, the lenders receiving shares in the company to which the government paid interest at three p.c. New shares were issued at a large premium, and in 1719 were selling at forty times their face value.

Armed with absolute power, Law took strong measures to avert a collapse, but his edicts, fixing the price of the shares, and in other ways striving to perpetuate an artificial state of affairs, failed miserably of their purpose. By July, 1720, the bubble had burst. The government took back the national debt, but speculators had suffered enormous losses. *See* Law, John.

Mississippi Sound. Channel between the coast of Alabama and Mississippi states, U.S.A., and several narrow islands which cut it off from the Gulf of Mexico. About 70 m. long, with a mean breadth of

8 m., it extends from Lake Borgne and Mobile Bay, and is navigable by coasting vessels.

Missive (Lat. *missus*, sent). In Scots law, a letter exchanged between two parties, in which the one specifies and the other accepts the terms and conditions of an offer of purchase or sale, or other mutual transaction. A missive constitutes a legal contract.

Missolonghi, MESOLONGHI, OR MISOLONGION. Town of Greece. Situated on a swampy plain N. of the Gulf of Patras, and about 20 m. N.W. of Patras, it has a trade in currants, valonia, and local products. The town was formerly of some military importance, being besieged unsuccessfully by the Turks in 1821-22 and in 1825-26 during the Greek War of Independence. Byron died here on April 19, 1824, and a monument was erected to his memory in 1881. Pop. 10,000.

Missoula. City of Montana, U.S.A., the co. seat of Missoula co. It stands on the Missoula river, 125 m. W.N.W. of Helena, and is served by the Northern Pacific and the Chicago, Milwaukee and Puget Sound rlys. It contains the state university. The Northern Pacific Rly. has workshops here, and lumber milling is carried on. Lumbering, agriculture, fruit-growing, and mining are important local industries. Missoula was founded in 1864 and received a city charter in 1887. At Jumbo Mountain, E. of the town, an extensive series of horizontal markings represents shore lines of the former glacial lake Missoula. Pop. 12,700.

Missouri. River of the U.S.A. The longest tributary of the Mississippi river, it is formed by the junction of the Madison, Jefferson, and Gallatin rivers, which have their sources in the Rocky Mountains and unite at Gallatin City in Montana. Thence it flows N. and N.E. through a mountainous district and traverses a deep cañon called the Gates of the Rocky Mountains, the river here being compressed to 450 ft. for about 6 m. At Great Falls it makes a descent of 350 ft. in about 16 m., passing over a series of cataracts of much grandeur, the highest of which has a vertical drop of 90 ft. Below Fort Benton it turns E., passes through N. and S. Dakota in a S.E. direction, forms the boundary between Iowa and Missouri on the E. and Kansas and Nebraska on the W., and finally takes an E. course across Missouri to join the Mississippi about 20 m. above St. Louis.

Measured from the source of the Jefferson its length is 2,950 m., while from Gallatin City to the

Mississippi it is 2,700 m. Near the Grand Falls its breadth is 1,500 ft., at Sioux City 2,500 ft., and at its entrance to the Mississippi about 3,000 ft. It has several large tributaries, the principal being the Milk and Yellowstone in Montana, the James and White in South Dakota, the Nebraska or Platte in Nebraska, and the Kansas in Kansas. It drains



Missolonghi, Greece. Statue of Lord Byron, erected over the mound in which his heart was buried

a basin with an area of nearly 600,000 sq. m., and is navigable during part of the year to Great Falls, but in the low water season only to its confluence with the Yellowstone, its largest affluent. On its banks are many important towns, including Omaha, Atchison, Leavenworth, Kansas City, and Jefferson City. Its waters are turbid, which gives rise to its name, meaning mud river.

Missouri. Central state of the U.S.A. Its area is 69,420 sq. m., of which nearly 700 are covered with water. It is bisected by the Missouri river, which also forms the upper part of the W. boundary; the Mississippi marks the E. frontier. S. of the Missouri the surface is relieved by the forest-clothed Ozark Mts., the N. portion consisting of prairie and bottom lands, wooded only in part. An agricultural state, it yields rich crops of maize, wheat, oats, potatoes, cotton, tobacco, and flax. Stock-raising engages attention.

Missouri is the largest zinc- and lead-producing state of the Union, having more than 14,000 sq. m. of coalfields in operation, and a considerable output of iron ore and other minerals. Slaughtering and meat-packing, flour-milling, and boot and shoe making are among the many valuable industries. There are a state and other universities, besides numerous colleges, and, in addition to the

river, transport facilities include 8,160 miles of steam and 1,085 miles of electric railway.

The state capital is Jefferson City, but Missouri contains three cities much more populous, St. Louis, Kansas City, and St. Joseph. Other cities are Joplin, Springfield, Sedalia, Hannibal, Webb City, and Carthage. The pop. is 3,400,000, only a small proportion being negroes, but the state has a large German element.

Missouri was part of Louisiana, and as such was settled by the French. In 1762 it was transferred to Spain, and in 1803 the large district of which the future state formed part was sold to the U.S.A. In 1812 Missouri was made a territory, and in 1821 was admitted to the Union as a state. It is governed by a general assembly which consists of a senate, elected for four years, and a house of representatives, elected for two. The franchise is on a democratic basis, a short residential qualification being necessary. It sends two senators and 16 representatives to Congress.

Missouri Compromise. Arrangement made in 1820 by which the territory of Missouri was admitted as a state of the American Union. The state constitution submitted by Missouri recognized slavery, a fact which aroused a vehement agitation against it in the Northern states, and caused a two-years' deadlock in Congress, the Senate supporting and the House of Representatives opposing the application. Ultimately an agreement was attained by which slavery was prohibited in the whole of the Louisiana Purchase N. of lat. 36° 30', except that part of it forming the territory of Missouri, nearly all of which lay to the N. of that line. The arrangement, which was repealed in 1854, is the first instance in which slavery in public territory was forbidden by Congress. Missouri was admitted to the Union Aug. 10, 1821.

Mist. Cloud at ground level, and very similar to a fog. After a clear, cold night, mist frequently fills the valleys; in rainy weather mist enshrouds the hill tops, though the valleys are dry. See Fog.

Mistake. In English law, an error of fact which entitles the party who has paid money under the mistake to recover it, or a party who has entered into a transaction to have it set aside. A mistake of law cannot be pleaded, nor will anyone be allowed to say that he was mistaken as to the meaning of the words in a contract. Where there has been a mutual mistake in the drawing up of a contract or conveyance, so

that it expresses something which the parties had not really agreed, the court has jurisdiction to rectify the document so as to cause it to express the real intention of the parties.

Mistassini. Lake in the fur country of Quebec, Canada. Drained by the Rupert river. Small islands divide it down the centre into practically two sheets of water. Length 100 m., breadth 15 to 20 m., depth 300 to 400 ft.

Mister. English masculine title of respect, abbreviated in writing to Mr. A variant of master, it is used as a prefix in speaking in a ceremonious way of anyone, and sometimes in addressing a man in speech or writing. In its present sense it has been used since the 15th century or thereabouts, when it supplanted master. It is also used as a prefix to certain titles of office, e.g. Mr. Speaker. The feminine is mistress (*q.v.*). The French equivalent is monsieur, and the German is herr.

Misti. EL. Volcanic mt. of Peru in the prov. of Arequipa. It is situated a few miles N.E. of the city of Arequipa. Alt. 19,200 ft.

Mistletoe (*Viscum album*). Evergreen semi-parasitic shrub of the natural order Loranthaceae. Native of Europe and North Asia, its stems vary in length from a foot to four ft., and the bark is yellow-green. The leathery leaves are of the same colour, and are oval-lance-shaped, mostly in pairs. The inconspicuous green flowers consist of four triangular sepals, a similar number of anthers, and an ovary with simple stigma. The berries are white, a third of an inch in diameter, with a single seed invested by glutinous pulp. The berries are eaten by birds, and the seeds become attached to the branches of trees by their agency. On germination the embryo pierces the bark and penetrates to the wood. It draws most of its food from the tree, but manufactures carbohydrates in its leaves. Its host-

plants are very numerous, the chief being black poplar and apple in England and the plains of France; but in Dauphiné and the Rhine valley it is most abundant on Scots pine. American mistletoe, of which there are several species, forms a distinct genus.

The mistletoe is prominent in European folk-lore as a magical plant credited with many virtues, from giving the power to see ghosts to healing diseases. See Balder; Druid; Golden Bough.

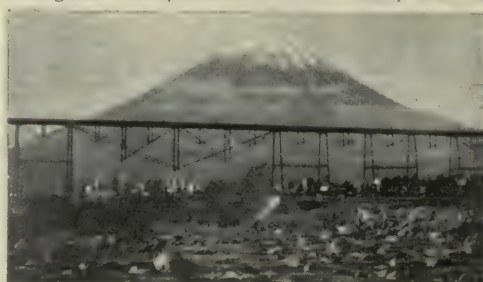
Mistral. Cold, dry wind experienced chiefly in winter along the Rhône valley and the coasts of the Lion gulf. A depression over the

half of the Nobel prize for literature, and devoted it to the purchase of a palace in Arles in which to house the Félibrean Museum. He died March 25, 1914.

See Penseurs et Poètes, G. Paris, 1896; Mistral, C. A. Downer, 1901; Bibliographie Mistralienne, E. Lefèvre, 1903.

Mistress. English title of respect, the feminine of master, or mister. In English, in the form missis, abbreviated to Mrs., it is

the customary way of addressing untitled married women. It is also used for any woman in a position of authority, e.g. the mistress of a household, or the mistress at a school. Another use is for a woman who occupies the place of wife, e.g. history is full of



Misti. View of the Peruvian volcano, showing the city of Arequipa in the foreground

Mediterranean, accompanied by anti-clockwise circulation of the air, brings down heavy cold air from the central plateau of France as a N.W. wind, and causes a hot sirocco to blow from the African coasts northward. See Bora; Sirocco.

Mistral, FRÉDÉRIC (1830-1914). Provençal poet. The son of a peasant, he was born Sept. 8, 1830, at Maillane, Bouches-du-Rhône. After trying farming he turned to literature. His rustic epic, *Mirèio*, 1859, gave wide recognition to the movement for reviving Provençal language and literature. It was followed by other notable works in the Provençal language; *Calendau*, part legendary part allegorical, 1867; and *Lis Iselo d'Or* (The Golden Isles), a collection of his

shortest poems, 1875. Later works were *Nerto*, a light romantic tale in verse, 1884; *Lou Pouèmo dóu Rouse*, an epic of the Rhône, 1897; and *Moun espelido*, 1906, translated into English as *Memoirs of Mistral*, C. E. Maud, 1907. In 1904 Mistral received

references to mistresses of kings. The French equivalent is *madame*.

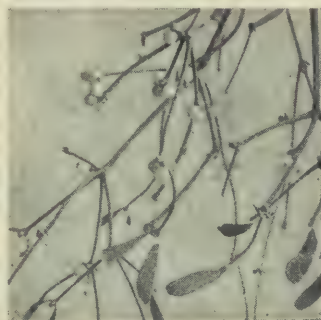
In Great Britain the mistress of the robes is an official of the queen's household, the post being held by a peeress of high rank. See Royal Household.

Mistretta (anc. Amestratus, Amastra and Mytistratum). Town of Sicily. It stands on the Regitano 11 m. by road S. of San Stefano di Camastra on the coast rly. and 61 m. E.S.E. of Palermo. Situated at an alt. of 3,228 ft., it is on the only high road across the Monti Nebrodi to Nicosia. Pop. 14,000.

Mitau or MITAVA. Town of Latvia. It stands on the Aa and the Libau-Riga rly., 25 m. S.W. of Riga. There is considerable trade in corn, flax, and timber. Founded in 1271 by the Teutonic Order, it



Frédéric Mistral,
Provençal poet



Mistletoe. Spray of leaves and berries



Mitau, Latvia. Castle formerly belonging to the grand dukes of Courland

was the residence of the grand dukes of Courland during the 16th century. In 1795 it was acquired by Russia. The town changed hands several times in 1915 during the operations between the Russians and the Germans in the Great War. Pop. 40,000. See Courland, Campaign in.

Mitcham. Urban district of Surrey. It is 10 m. S. of London and 4 m. from Croydon, with two stations, one at Mitcham Junction, on the L.B. & S.C. Rly. Astragglng place, on the little river Wandle, it is divided into three ecclesiastical districts, the churches being Christ Church, S. Mark, and SS. Peter and Paul. Mitcham Common, 480 acres, was one of the earliest homes of golf in England, and the village green has long been famous for its cricketers. The industries include laundries and the manufacture of sweets, paper, etc., also market gardening and the growing of lavender and other herbs for scents. A tramway service links it up with London. The charter fair held annually on Aug. 12 has been in existence from ancient times. A stone has been erected on Mitcham Green, as a memorial to 500 men from the district who fell in the Great War. The fair was held on the old green for the last time in 1923. Pop. 34,500.

Mitchel, JOHN (1815-75). Irish nationalist and journalist. Born in co. Derry, Nov. 3, 1815, the son of a Presbyterian minister, and educated at Trinity College, Dublin, he was prosecuted in 1848 for writing seditious articles in *The United Irishman*, and was



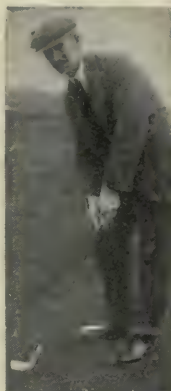
John Mitchel,
Irish nationalist

sentenced to transportation for 14 years. Escaping from Van Diemen's Land, he made his way to America in 1853, where he became a prominent advocate of slaveholding and the Southern cause. In 1875, while still in America, he was elected member for Tipperary. His right to take his seat was denied on the ground of his conviction for treason felony, but the electors returned him a second time. Mitchel returned from America with the intention of contesting the point, but died at Dromalane, March 20 of the same year.

Mitchell. Peak of the Black Mts., in N. Carolina, U.S.A. Known also as Mitchell's Peak and Black Dome, it is 6,711 ft. in alt., the highest summit of the U.S.A. east of the Rocky Mts. See Appalachians.

Mitchell. City of South Dakota, U.S.A., the co. seat of Davison co. It stands on the James river, 71 m. W. by N. of Sioux Falls, and is served by the Chicago, Milwaukee and St. Paul, and the Chicago and North-Western rlys. It is the seat of Dakota University. It manufactures rly. and machine-shop products, cigars, cream, and confectionery, has grain elevators and brickyards, and trades in agricultural produce and livestock. Settled in 1879, Mitchell was chartered as a city in 1883. Pop. 8,500.

Mitchell, ABE (b. 1887). English golfer. He was an amateur member of the Cantelupe Golfing



Abe Mitchell,
English golfer

Society, played for England against Scotland in the Amateur International Matches, 1910, 1911, 1912, and was runner up in the Amateur Championship, 1912, being beaten by John Ball at the 38th hole. He became a professional in October, 1912, won the gold medal at The Daily Mail Tournament and The News of the World Tournament in 1919, and the £1,000 Glenc Eagles Tournament in 1921. He was attached to the North Foreland Golf Club, Broadstairs. See Golf.

Mitchell, CHARLES (1861-1918). British boxer. Born at Birmingham, his first important success was his defeat of Bob Cunningham in a knuckle fight at Birmingham early in 1878. In 1882 he won the middleweight and heavyweight championships of England, and visited America, 1883-84, where he gained several notable victories, but was defeated by John L. Sullivan. He again fought the latter, at Chantilly, in 1888, with bare knuckles, the contest resulting in a draw after 39 rounds. Mitchell challenged Jim Corbett, the American world's champion boxer, but was defeated after three rounds, at Jacksonville, 1894. He died April 2, 1918. See Boxing.

Mitchell, PETER CHALMERS (b. 1864). British zoologist. Born at Dunfermline, Nov. 23, 1864, and educated at Aberdeen, Oxford, Berlin, and Leipzig, his first appointment was that of University demonstrator of comparative anatomy at Oxford, and he held many lectureships and examinerships



P. Chalmers Mitchell,
British zoologist

Cairo-Cape Town flight.

Mitchell, SILAS WEIR (1829-1914). American neurologist and author. Born in Philadelphia, Feb. 15, 1829, and educated at the Jefferson Medical College there, he inaugurated the Weir-Mitchell treatment for neurasthenia, hysteria, etc., substituting



S. Weir Mitchell,
American neurologist

massage, rest, and isolation for the exercise treatment previously advocated. His treatment became famous, and he was given many honorary degrees by universities. He was president of the Association of American Physicians, 1887, and President of the American Neurological Association, 1908-9. Among his many scientific books are *Injuries to Nerves and their Consequences*, 1864; *Rest in the Treatment of Disease*, 1875; and *Clinical Lessons on Nervous Diseases*, 1895. He died Jan. 4, 1914. Weir Mitchell was a prolific writer of children's books, among which is *The Wonderful Stories of Fuz-buz, the Fly, and Mother Grabem, the Spider*, 1867; and novels, as *Hephzibah Guinness*, 1880; *Roland Blake*, 1884; *Hugh Wynne*, 1897; *The Red City*, 1908; *John Sherwood*, Ironmaster, 1911. See Weir Mitchell Treatment.

Mitchell, SIR THOMAS (1844-1919). British naval engineer and draughtsman. Born at Belfast, he was educated at Chatham and served his apprenticeship in



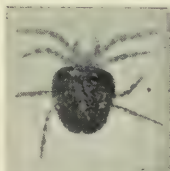
Sir Thomas Mitchell,
British engineer

the dockyard there. He became a draughtsman in 1871, spent three years at the admiralty, and from 1874 to 1907 was closely identified with the building of British warships. He was foreman of Portsmouth dockyard during the building of the *Trafalgar*; admiralty overseer at Palmer's shipyard,

Jarrow, 1889-91, where he superintended the building of the Resolution and the Revenge; constructor at Hong Kong, 1891-95; senior constructor at the Devonport dockyard, 1895-99; and chief constructor at Bermuda, 1899-1902; and at Sheerness, 1902-3. His last post was that of manager of the constructive department, Portsmouth, from which he retired in 1907. Under his supervision, during that period, the Dreadnought (*q.v.*) and the Bellerophon were built. He was knighted in 1906, and died March 31, 1919.

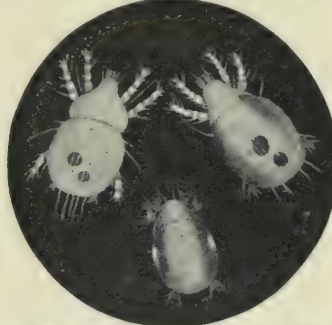
Mitchelstown. Market town, co. Cork, Ireland. It is 11 m. N. of Fermoy or the G.S. & W. Rly. There are remarkable stalactite caves about 6½ m. N.E. of the town. Serious rioting occurred here in 1887. The castle is a seat of the earl of Kingston. Market day, Thurs. Pop. 2,300.

Mite. Small creatures, belonging to the class Arachnida and order Acarina. Most of them are very small, and some resemble miniature spiders. They have no "waist," the thorax and abdomen being fused together, and the latter is entirely unsegmented. Many are parasitic on animals and plants and do considerable damage, some being the cause or vehicle of serious disease. Thus the diseases known as itch and mange (*q.v.*) are caused by mites that attack the skin. Another species, commonly known as the harvest bug, bores, during its larval stage, into the human skin, causing great irritation. A red mite is a parasitic pest of poultry and cage birds. Another mite,



Mite. Highly magnified specimen of red earth mite

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Mite. Left, specimens of *Rhizoglyphus echinopus*, mites which live between the scales of bulbs. Right, Big Bud mites, *Eriophyes ribis*, which infest currant buds. All highly magnified

commonly known as the red spider, invades hop gardens and does much damage in greenhouses by



Mitchelstown, Ireland. Main entrance to the modern castle, seat of the earl of Kingston

sucking the juices of plants. A wormlike mite of the genus *Demoder* inhabits the sebaceous follicles of the human skin. Others infest cheese, flour, etc. See Insects.

Mitford, MARY RUSSELL (1787-1855). British novelist and dramatist. She was born at Alresford in Hampshire, Dec. 16, 1787, the daughter of a doctor, whose extravagances kept her poor all her life. Her tragedies, *Julian*, 1823; *The Foscari*,



Mary Russell Mitford

1826; *Rienzi*, 1828; and *Charles I*, 1834, met with tolerable success, though none of them is now acted. Her fame rests more surely on her sketches of country life and character, contributed in the first instance to *The Lady's Magazine* and republished as *Our Village*. In 1852 appeared *Recollections of Literary Life*. Mary Mitford died at Swallowfield, near Reading, Jan. 10, 1855. See *Life and Letters*, ed. A. G. L'Estrange, 1870.

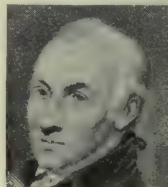


College, Oxford, he inherited his father's estate at Exbury, Hampshire, in 1761, and devoted himself to the study of Greek. At the suggestion of Gibbon, whose fellow officer he was in the Hampshire Militia, he wrote a *History of Greece*, 1784-1810, which, though painstaking and accurate so far as it goes, is vitiated by the author's

dislike of democratic institutions. Between 1785 and 1813 Mitford represented Newport, Cornwall, Beeralston, and New Romney in Parliament. He died at Exbury, Feb. 10, 1827.

Mitho or MYTHO. Town and river port of French Indo-China.

Cochin China. It is 23 m. from the sea on the chief distributary of the Mekong delta, and is the terminus of a rly. through Saigon to Nha Trang.



William Mitford, British historian

Mithradates VI OR MITHRIDATES (131-63 B.C.). King of Pontus. On the murder of his father,



Mithradates VI, King of Pontus
From a coin

Mithradates V, in 120 B.C., he became king, and on reaching man's estate extended his conquests to the Crimea and parts of Armenia. Ordered by the Romans

to give up Cappadocia, which he had annexed, he defeated all efforts to oust him, and eventually overran the whole of the Roman province of Asia. No fewer than 80,000 Roman citizens resident in various towns of the province were put to death by his orders. In 87 B.C. Sulla arrived in Greece, into which Mithradates had thrown an army, and signally defeated the king at Chaeronea and Orchomenos in 86, while another Roman army under Fimbria defeated him in Asia, and the king was forced to conclude peace.

Fighting was renewed again in 83 and 82 B.C., but was not of long duration. The third Mithradatic War began in 74, and lasted till 63. Lucullus, the Roman general in command, was at first successful,

Mitford, WILLIAM (1744-1827). British historian. Born Feb. 10, 1744, and educated at Queen's

driving Mithradates from Pontus and defeating also his brother-in-law, Tigranes, king of Armenia, with whom Mithradates had taken refuge. He penetrated too far, however, into Mesopotamian Armenia, and was compelled to return. In the meantime Mithradates recovered the greater portion of Pontus, and the military efforts of eight years were brought to nought. The war was finally brought to an end by Pompey, whose army drove Mithradates into the Crimea, where, at his request, a Gallic attendant put an end to his life.

Mithras OR **MITHRA**. Sun god among the Persians, chief of the kindly spirits created by Ormuzd. He was looked upon as the god of faithfulness and purity, and the protector of man. Mithraism, brought to Rome 68 B.C., was very prevalent throughout the Roman empire, especially in the army, in the 2nd and 3rd centuries of our era, and was a rival of Christianity, but was suppressed A.D. 378.

Mitla OR **MICTLAN** (Place of the dead). Village of Mexico. It is situated 30 m. E. of Oaxaca in the dist. of Tlacolula. Within a mountain-girt valley are five groups of ancient buildings. Rectangular in shape, massive and built of dressed stone, each group is arranged as a quadrangle with a paved inner court; the exterior walls have neither door nor window, and the inner walls are pierced by doorways with single stone slab lintels. In 1495 the Aztecs captured the place, but beyond this its history is obscure. See Mexico.

Mitrailleuse (Fr. *mitraille*, grape shot). French name for machine guns in general. The original Montigny mitrailleuse was taken up by the French in 1869 and introduced in

actuated by hand. The cartridges were carried in metal plates, having 25 holes drilled through them corresponding to the arrangement of the barrels. The breech-block having been slid back, a plate full of cartridges was slipped into grooves on its forward face. When the breech-block was pushed forward again, it carried the cartridges into the barrels and simultaneously cocked the firing mechanism. By revolving a crank handle the cartridges were fired



Mitre. 1. Gothic. 2. Roman, with bands detached; 3. Anglican mitre

By courtesy of Burns, Oates and Washbourne, and A. E. Mowbray & Co., Ltd.

successively, one complete revolution of the crank firing all 25 in approximately one second. It was possible to fire 250 shots per minute.

The French had 156 of these weapons at the time of the Franco-Prussian War, but they were employed in conjunction with the artillery, and field-gun tactics applied to them, with the result that it was rarely possible to obtain their full effect, and though effective when concealed, they were soon put out of action by the opposing artillery when located. See Machine Gun.

Mitral Valve.

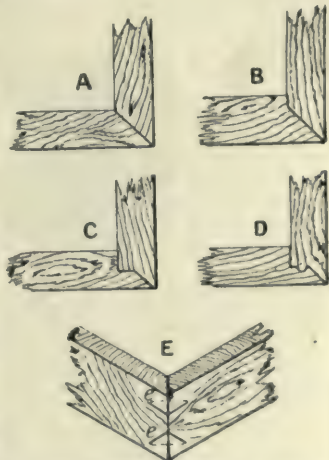
Valve in the left ventricle of the heart, consisting of two flaps which surround the opening from

the left auricle into the left ventricle. During the process of systolē, or contraction of the heart, the valve is opened and blood passes freely from the auricle into the ventricle. In diastolē, the valve closes, and thus prevents the blood from flowing back from the ventricle into the auricle. In certain diseases, e.g. rheumatic fever, the mitral valve sometimes be-

comes narrowed, and may be prevented by adhesions from closing fully. This condition, known as mitral stenosis, prevents the blood from passing freely in the heart from the auricle to the ventricle. See Heart.

Mitre. Head-dress of bishops and certain abbots of the Western Church, and occasionally of other ecclesiastics. The Jewish high priests wore a tall form of head-dress, called *mitra* in the Septuagint, but it is denied that the mitre was an adaptation of this. In its early forms, the mitre, which came into use about the 10th century, was low and simple. In the 14th century it increased to a foot or more in height. In the Church of England mitres fell into gradual disuse after the Reformation, disappearing in the 18th century, but were revived by some Anglican bishops after 1885. The English form is smaller than that worn by bishops of the R.C. Church. The mitre of bishops of the Greek Church is a dome-shaped crown. See Tiara.

Mitre. In building and joinery, the line formed by the intersection or juncture, generally at a right angle, of two similar blocks or mouldings, the meeting ends being equally bevelled. In certain ancient Greek structures, the mitre was not carried straight through the entire joint, but was deflected, thus making the joining half mitre and half butt-joint. In the case of double blocks the mitring was generally done on the inner blocks, the outer forming a butt-joint. See Joinery.



Mitre. A. Common form. B. Mitre where wooden members are of different widths. C. Greek mitre. D. Tongued mitre. E. Keyed mitre; e.g. wooden keys glued and driven into the saw cuts at an angle

Mitrailleuse. Diagram illustrating principal parts of the mechanism. A. Trail. B. Carriage. C. Axle-pin. D. Trunnion. E. Loading lever. F and G. Elevating gear. H, J, and K. Apparatus for ejecting empty cartridge cases from plates. L. Firing lever

the army for the Franco-Prussian War, 1870-71.

This weapon consisted of 25 rifle barrels mounted inside a casing somewhat resembling in appearance the barrel of a field-gun. The breech-block, provided with firing mechanism and strikers for the 25 cartridges, slid backwards and forwards in the barrel casing when a "loading lever" was

Mitre, BARTOLOMÉ (1821-1906). Argentine soldier, president, and man of letters. Born at Buenos



Bartolomé Mitre, Argentine statesman

Aires, June 26, 1821, he began his public life as journalist in 1838 at Montevideo. Leaving Uruguay for Bolivia, he became chief of the staff to the president, on whose fall he was exiled and went to Peru, and thence to Chile, where he became noted as a journalist, and for his attacks on the government was again exiled.

In 1852 Mitre returned to Argentina, and having taken part in the successful revolt against Rosas when Buenos Aires became an independent province, he was successively commander-in-chief of its army, minister of war, and minister of government and foreign relations. In 1862 he was elected president of the confederation for six years. He died Jan. 18, 1906. Founder of *La Nación* (q.v.) and prominent as a writer, he was author of *Historia de Belgrano y de la Independencia Argentina*, 1859, and *Historia de San Martín y de la Emancipación Sud-Americana*, 1889-90 (abridged English translation, *The Emancipation of South America*, 1893).

Mitrovitz. Town of Yugoslavia, formerly in Hungary. It is situated in Slavonia on the left bank of the Sava on the boundary of Serbia, 57 m. by rly. *via* Indjiia from Belgrade. Pop. 13,000.

Mitry, HENRI DE (1857-1924). French soldier. The son of the comte de Mitry, of an old Lorraine family, he was born at Le Ménil Mitry, Sept. 20, 1857, and educated at the Lycée at Nancy and at St. Cyr. He entered the French army as a lieutenant of cavalry in 1877, was colonel of the 29th Dragoon Regiment in 1910, and general of brigade in Aug., 1914, becoming general of division in Feb., 1915. During the Great War he commanded successively the 1st cuirassier brigade, the 6th cavalry division, the 2nd cavalry corps, the 6th army corps, part of the army of the north, and the French 9th and 7th armies. He took part in the battles of the Yser, Oct.-Nov. 1914, of the Aisne in 1917, and in



Henri de Mitry, French soldier

1918 in the battle of Montdidier, and the 2nd battle of the Marne. He died Aug. 18, 1924.



Mitten. Covering for hand and wrist

fashionable among women in the early part of the 19th century.

Mittweida. Town of Saxony. Situated 35 m. S.E. of Leipzig, it has textile factories and machine shops. In the neighbourhood are silver-lead mines. Pop. 18,000.

Mitylene or MYTILENE. Island in the Aegean Sea, off the coast of Mysia, anciently called Lesbos.



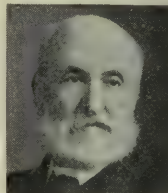
Mitylene, Aegean Sea. The town of Mitylene, on the east coast of the island, seen from the roadstead

Its area is 675 sq. m. It is mountainous, with two excellent harbours, the soil is fertile, and corn, olives, and vines are extensively cultivated. About 1100 B.C. it was occupied by Aeolian immigrants, and five centuries later, under its "tyrant" Pittacus, it became the centre of the civilization of the Aeolians of Asia Minor. Greek lyrical poetry arose in Lesbos, the birthplace of Alcaeus, Terpander, Sappho, and Erinna.

It was successively in the hands of Persians, Athenians, Mithradates, and the Romans. In the 14th century the east Roman emperor, John Palaeologus, bestowed it upon a Genoese nobleman, by whose descendants it was held until its conquest by the Turks in 1462. In 1913 it was restored to Greece. Its most important towns were Mitylene and Methymna. After the defeat of the Persians, Mitylene joined the Athenian naval league, but, having revolted, its territory was distributed among Athenian settlers. In the time of Alexander it suffered severely from the Macedonians, and later from the Romans, as a punishment for having supported Mithradates. It was rebuilt by Pompey and soon recovered much of its prosperity, and was

especially favoured by Tiberius and Nerva. Pop., island, 130,000; town, 50,000. *Pron.* Mitti-lénä.

Mivart, ST. GEORGE JACKSON (1827-1900). British scientist. Born Nov. 30, 1827, Mivart was



St. George Mivart, British scientist
Elliott & Fry

educated at Clapham and Harrow, afterwards studying at King's College, London. After joining the Roman Catholic Church, he was called to the bar, but devoted himself to science, and in 1862 became lecturer on anatomy at St. Mary's Hospital. In 1869 he was made F.R.S., and was secretary of the Linnean Society, 1874-80. For three years he was a professor at Louvain. Meanwhile, his writings had given him a reputation as a

zoologist, and brought him into touch with Darwin and Huxley, while his lectures at the Zoological Gardens and the Royal Institution made his name popular. He did not accept the Darwinian theory of evolution, although in a sense he was an evolutionist. In his later years he turned to the study of philosophy, and wrote certain articles which led to his excommunication. He died April 1, 1900. Among his voluminous writings may be mentioned: *On the Genesis of Species*, 1871; *Man and Apes*, 1873; *The Cat*, 1881; *Nature and Thought*, 1882; *The Origin of Human Reason*, 1889; and *Birds*, 1892.

Mixtec. American Indian tribe in Oaxaca, Guerrero, and Puebla, Mexico. They numbered 166,157 in 1910. Still progressive, they are descended from a pre-Spanish people who stood outside the Aztec confederacy. Their advanced culture and industrial art embodied both Mexican and Mayan characteristics. *See* Maya; Mexico.

Mixture. In chemistry, a term used to imply that the ingredients of a composition retain their individual properties. Sulphur and iron filings may be mixed together without chemical combination

taking place, and the two ingredients can be separated by appropriate means. If, however, heat is applied to the mixture, the iron and sulphur combine chemically, and a new substance, iron sulphide, is formed, which possesses the characteristics of neither ingredient. The term mixture in pharmacy is applied to liquid medicines which either contain insoluble substances in suspension, or are composed of two or more liquids, with or without other matters in solution.

Miyajima. Sacred island of Japan in Hiroshima Bay, an arm of the Inland Sea. The island, also called Itsukushima, is counted as one of the three most celebrated sights in Japan, on account of its scenery and temples; it is 5 m. by 2½ m., and culminates in Misen, 1,800 ft. Miyajima town, pop. 4,000, on the N.W. coast, is connected by steam ferry with Miyajima station in Honshu, on the main line between Kobe and Shimonoseki. The temples were known in the 9th century, restored in the 12th century, and destroyed by fire and rebuilt several times since. About 40,000 pilgrims visit the island annually. See Inland Sea.

Miyanoshita. Inland watering-place of Japan, in the Hakone dist. of Honshu. It is situated on a wide level tract in the valley of the Hayakawa, 1,200 ft. alt., almost shut in by mountains. It is 12 hours' journey by rail from Tokyo, and is frequented by Europeans at Christmas and New Year.

Miyazu. Town of Japan, in Honshu. Situated on Miyazu Bay, an arm of Wakasa Bay, on the N. coast, almost due N. of Osaka, it is a small port with trade in beans from Manchuria. The neighbouring pine groves of Ama-no-hashidate are one of the famous sights of Japan. Pop. 9,000.

Mizar. In astronomy, a well-known double star. Called alternatively Zeta Majoris, it is the middle star of the Bear's tail, and varies from about the 2nd to the 4th magnitude. The larger star of the pair is itself double to spectroscopic examination, though single in the telescope. Its components are both bright and nearly equal, revolving round one another in 20 days 14 hours.

Mizpah OR **MIZPEH** (Heb., a watch-tower). Ancient name of several high-lying places in Palestine. (1) The place, unidentified, where Jacob and Laban formed a compact (Gen. 31). (2) A region at the foot of Mt. Hermon (Josh. 11), probably near the Druse village of Mutella. (3) Mizpeh of Gilead, the home of Jephthah. (4) A town for-

tified by Asa, and chosen as his residence by Gedaliah, governor of Jerusalem, after its capture, 586 B.C. It has been identified with Nebi Samwil, a mt. 2,935 ft. in alt., 4 m. N.W. of Jerusalem. It owes its present name ("Prophet Samuel") to a Moslem tradition which makes it the burial-place of Samuel (cf. 1 Sam. vii, 6, 16), and its Moslem mosque, formerly a Crusaders' church, contains a cenotaph which the Moslems revere as the tomb of the prophet. Nebi Samwil was stormed by the British troops on Nov. 21, 1917.

M.L.A. Abbrev. for Member of the Legislative Assembly.

Malwa. Town of Poland. It is in the government, and 50 m. N.E., of Plock, on the Malvka, and



Moa. Reconstructed specimen of the extinct flightless bird of New Zealand

a station on the Warsaw-Mlawa railway. The chief industries are weaving, tanning, brickmaking, and the manufacture of vinegar, oil, soap, mineral waters, and agricultural machinery. It was captured by the Germans Oct. 14, 1914, in their invasion of Poland. Pop. 14,000. *Pron.* Mlahva.

M.M. Abbrev. for Military Medal (*q.v.*).

Mnemonics (Gr. *mnemonikē*, art of memory). The art of improving the memory, especially by artificial aids and methods. Nearly all such methods depend upon the association of ideas (*q.v.*), and are chiefly based upon the principles of localisation and analogy. The former, topology, associates what is to be learnt with the picture of a building or place well known to the learner; the latter establishes an analogy in the

case of things or words between them and some familiar object.

Technical verbes, in some cases quite meaningless (as the Barbara, Celarent, of the logicians), and the substitution for numbers of letters of the alphabet (1=*a*, 2=*b*), which are made up into words and phrases, form another kind of aid. The art of memory is of very ancient date, and was regularly cultivated in the Greco-Roman schools. The Greek poet Simonides, 6th century B.C., employed the topological method. In the Middle Ages Raymond Lully's Great Art was similarly arranged.

Attention is now directed rather to the psychological side of the question as likely to suggest means for the improvement of the memory. Purely mechanical systems are prejudicial to more intelligent and scientific methods, although they may be usefully applied to lists of names and dates, and even to the learning of foreign words, by inserting an intermediate link in the shape of a word or words, recalling by association the two extremes. See Memory Training. *Pron.* Neemonics.

Mnemosynē. In Greek mythology, a daughter of Uranus, and the personification of memory. By Zeus she was the mother of the Muses.

M.O. Abbrev. for Money Order and Medical Officer.

Moa. Native name for the *Dinornis*, a genus of extinct flightless birds, which formerly inhabited New Zealand. About 20 species have been identified from their remains, the largest standing nearly 12 ft. high, the smallest being about as large as a turkey. They had apparently disappeared when European colonists arrived in New Zealand, but the state of preservation of the eggs, feathers, and bones which are found in abundance in Holocene deposits, suggests that the birds had not long been exterminated. They were unable to fly, but their long and powerful legs indicate that they could run with great speed. They had rounded, loosely constructed feathers, and their eggs were of a pale green colour.

Moab. Territory occupied in ancient times by the Moabites. It is an elevated tableland E. of the Dead Sea and lower Jordan valley, extending eastward to the Arabian desert. The river Arnon and other rivers flow westward through deep valleys. See Dead Sea; Palestine.

Moabites. Ancient Semitic people, closely related to the Hebrews. According to Gen. 19, they were descended from Moab incestuously begotten by Lot. They were frequently at war with Israel

and Judah, and were conquered by David. Solomon took Moabite wives, and introduced the worship of their national god Chemosh (*q.v.*) into Jerusalem. The Moabites recovered their independence, and Mesha, who set up the Moabite stone, won victories over Israel. Moab disappeared after the Babylonian conquest. *See* Palestine.

Moabite Stone. Black basalt slab from Dibon, Moab. Discovered by Klein, 1868, interna-



Moabite Stone. Ancient record of Moab's battles with Israel, dating from c. 850 B.C.

tional competition led to its being shattered by its Beduin custodians. It was recovered for the Louvre, Paris, and its reconstruction was aided by paper squeezes secured by Clermont-Ganneau, covering 34 lines of primitive Hebrew script in the Moabite dialect of about 850 B.C. This inscription narrates Israel's conflict with Mesha.

Moat. Large trench round a fortified place for defensive purposes. The term is derived from the French *motte*, meaning an embankment and, in Norman-French, the ditch formed by the excavation necessary for providing the soil for such an embankment. Medieval castles were frequently provided with two moats, in many cases filled with water, an inner one encircling the keep and an outer the precincts. By means of a moat the height of a battlement was very considerably increased. *See* Bodiam Castle; Castle; Keep.

Moat Farm Murder. Murder of a Miss Camille Holland by a man named Dougal at the Moat Farm, Clavering, Essex, May 19, 1899. Miss Holland, who had a considerable fortune when she fell in with Dougal, was persuaded to reside at the Moat Farm, which she purchased. On May 19, 1899, she disappeared. On Aug. 1, 1900, Dougal produced a document apparently

signed by Miss Holland, transferring the Moat Farm to himself. On March 18, 1903, he was arrested and charged with forgery. Finally Miss Holland's body, with a bullet in the skull, was dug up in one of the outlying fields. Dougal was tried, found guilty, and executed.

Moawiya. Caliph of Damascus 661-680, and founder of the Omniad dynasty. Governor of Syria, he revolted against the caliph Ali, and after the murder of the latter was proclaimed his successor. The dynasty lasted until 750. *See* Caliph.

Moberly. City of Missouri, U.S.A., in Randolph co. It is 130 m. E.N.E. of Kansas City and is served by the Wabash and the Missouri, Kansas, and Texas rlys. Situated in a coal and fireclay district, it trades in agricultural produce and manufactures foundry and machine-shop products, etc. The Wabash Rly. has large works here. Founded in 1866, it was incorporated in 1868 and became a city in 1873. Pop. 12,800.

Mobile. Bay and river of Alabama, U.S.A. The bay is formed by the Alabama and Tombigbee, which, after receiving the drainage of most of the state of Alabama, unite to flow S. to the Gulf of Mexico through an extensive delta of gum and cypress swamps. The Mobile is the W. and the Tensaw the E. of the five main distributaries which reach Mobile Bay, itself a part of the delta. Mobile river is 38 m. long; the bay is 27 m. long and 8 m. wide and less than 70 ft. deep. Mobile city is at the mouth of the river in the N.W. of the bay.

Mobile. City and seaport of Alabama, U.S.A., the co. seat of Mobile co. It is 135 m. E.N.E. of New Orleans, and is served by the Louisville and Nashville and other rlys. Its prominent buildings include the city hall, the Battle House, the city and the U.S. marine hospitals, etc. The seat of a bishop, it has a fine Gothic cathedral and several important educational institutions. Cotton, timber, resin, flour, cereals, coal, cotton-seed oil, and provisions are exported, and coffee, tropical fruits, asphalt, sisal grass, and potash imported.

Industries include saw-milling, shipbuilding, and the manufacture of cotton, veneers, and machine-shop products. There are important fisheries. Large harbour and dock improvements have been

undertaken, and the port is visited by steamers from Europe, New York, Cuba, and South America. The original city was founded in 1702 by the French, the present city, farther S., being built nine years later. It was the capital of the French colony of Louisiana; was British, 1763-80, and Spanish, 1780-1813. It received a city charter in 1819, and was rechartered in 1887. Pop. 60,000.

Mobilisation (Lat. *mobilis*, movable). Process of raising a fleet or army to war strength, providing it with transport, and rendering it able to move and operate. In the Great War it was carried out by issuing a mobilisation proclamation: Austria and Russia, July 31, 1914; France and Germany, Aug. 1; United Kingdom, navy, Aug. 3; army, Aug. 4. The proclamation usually ordered that the day following that on which it was posted up was to be "the first day of mobilisation."

On that day, in the case of the armies, began the incorporation and equipment of reservists, requisitioning of horses, wagons, and motor transport. Every reservist had orders where to present himself, usually at the headquarters of the unit to which he belonged. The process of expanding the peace force to war strength occupied, in France and Germany, three days. Each army corps mobilised in its own territory, and then (if not stationed near the frontier) was moved by rly. to the previously determined point of concentration, each corps having a rly. line to itself. The time taken for embarking a corps in trains was about two days, and the further time taken in mov-



Mobile, Alabama. Dauphin Street, the principal business thoroughfare of the city

ing the most distant corps to the front by rail in France and Germany, 2½ days, so that on the night of the 8th day from mobilisation the armies were able to begin deployment and operations. In the case of France, 4,064 trains were required to concentrate the troops and material, the maximum number on any one day being 395 trains on Aug. 10, 1914.

By about Aug. 12 the French

and German armies were ready to fight, the total time occupied in concentrating six million men and providing them with ammunition and supplies having been 11 days. The British fleet was ready to act so early as Aug. 3, and the British Expeditionary Force was ready to leave for France on Aug. 12. These feats may be contrasted with the 37 days required by the French in 1859 to mobilise 130,000 men and place them in Italy; with the 17 days required by Germany in 1870 to place 400,000 men on the French frontier; and with the 13 days required in 1899 by Great Britain to embark 40,000 men for the S. African War.

Moccasin OR **MOCASSIN**. Shoe worn by the N. American Indians. They are made of raw hide, with



Moccasin. Pattern and made-up moccasin of one piece

uppers of soft deer skin, though the materials vary slightly in different parts of the country. The uppers are often embroidered with beadwork or decorated with porcupine quills, etc. See Boot and Shoe, colour plate.

Moccasin (*Natrix*). Name of a snake found in N. America. It is harmless, and is related to the garter snake and the tessellated snake of Europe. It is sometimes, but improperly, applied to the water moccasin snake. See Snake; Water Moccasin.

Mocha OR **MOKHA**. Port in the Yemen, S.W. Arabia. About 60 m. N.W. of Cape Bab-el-Mandeb, it was formerly the centre of an immense trade in coffee, but a great part of its business has been transferred to Hodeida, farther up the coast of the Red Sea. Pop. 5,000.

Mock Heroic Poetry. Poetry written in burlesque of the heroic in action or character. It deals with the general, parody being concerned with the particular. The earliest example is that of *The Battle of the Frogs and Mice*, at one time supposed to be by Homer, but probably rather intended as a burlesque of his *Iliad*. Chaucer's *The Story of Sir Thopas*, in *The Canterbury Tales*, was written in mockery of the romances of the time. Beaumont and Fletcher in *The Knight of the Burning Pestle* dealt in stage mock heroics with the old romances, to which Cervantes at the same time was dealing a death blow in *Don Quixote*. But-

ler's *Hudibras*, Dryden's *Macflecknoe*, and Pope's *Dunciad* are satires in mock heroic form. The *Rehearsal*, by the duke of Buckingham and others, and *The Critic*, by R. B. Sheridan, depend for their fun on the mock heroic elements in them. Boileau's *Le Lutrin* was imitated and far surpassed by Pope in the *Rape of the Lock*, one of the wittiest examples of the mock heroic in English. See Poetry.

Mocking Bird (*Mimus polyglottus*). Common bird of N. America, nearly related to the thrush, which it much resembles in appearance. It gains its name from the facility with which it imitates the notes of other birds. It is found in the U.S.A. and the W. Indies, and is characterised by long tail, short wings, and whiteness of the underpart of the body. The wings and tail are black, marked



Mocking Bird. Cuban specimen of the American song-bird

with white, and the bird, including tail, measures a little less than a foot in length. See Bird; Catbird.

Mock Suns and Moons. Optical illusions often seen in conjunction with halos of the sun and moon. Known scientifically as *parhelia* and *paraselenae* respectively, images of the sun and moon appear on the circumference of a solar or lunar halo. The images are due to the prismatic reflection of the rays of light through ice crystals formed in the upper atmosphere. See Halo.

Mòd (Gael. from Old Norse, meeting or "moot"). Annual Gaelic festival. The meetings are held by An Comunn Gàidhealach, a society of Scottish Highlanders founded in 1891 to preserve and encourage the Gaelic language, music, etc., of Scotland. Competitions in singing, playing, etc., are held. The headquarters of the Comunn are at 114, West Campbell Street, Glasgow. *Pron.* mode.

Modder. River of S. Africa. Rising near Dewetsdorp, about 40 m. S.E. of Bloemfontein, it flows N. and then W. through the Orange Free State, and entering Bechuana-land, discharges, after a course of 186 m., into the Vaal, near where the rly. crosses the latter river on the way from Cape Town to Bulawayo.

The battle of Modder River (Nov. 28, 1899) was the third of the actions of the S. African War fought by Lord Methuen in his attempt to relieve Kimberley. The British were surprised by a Boer contingent under de la Rey, and the advance held up until the Boer flank was turned by Gen. Pole-Carew. Methuen was badly wounded. The Boer casualties were about 150, the British losses being nearly 400. See South African War.

Mode. Musical term of varied meaning. The Greek modes, and the modes of the Middle Ages which remained in use until about the middle of the 17th century, were concerned with the order of the tones and semitones in the octave scale, i.e. with the mode or manner of their arrangement.

The modes chiefly in use may be remembered in a rough and ready way by thinking of the white keys only of the pianoforte. The Ionian mode began on C, and was thus identical with our modern major scale; the Dorian on D; the Phrygian on E; the Lydian on F; the Mixolydian on G; the Aeolian on A, like the present descending

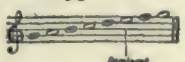


Mock Sun. Pictorial diagram showing halos round Sun and mock suns at their intersections

melodic minor scale; and the Locrian—little used and hardly recognized by authorities—on B. Each of these normal or authentic modes had a plagal scale related to it, running from dominant to dominant of the authentic scale. Thus the Ionian mode was as follows:



with dominant at G. The plagal form, called Hypoionian, was:



with dominant at E. See Gregorian chant; consult also Dictionary of Music and Musicians, G. Grove, vol. iii, pp. 222-32, 1904-10.

Model (Lat. *modus*, measure). Literally, a copy or pattern of anything. Models are largely used by scientists to convey ideas in mathematics and physics to the students. In practical affairs, when engineering work of various kinds is undertaken, models are first made. Models of various parts of the human body are used by students of medicine and art. In a special sense an artist's model is a person who poses for painters, or sculptors. See Drawing.

Modelling. Fashioning an article in some plastic substance. Potter's clay in a fairly liquid state is the principal material used. During the progress of the work the moisture is preserved by sprinkling with water, and at night by wrapping the model in a wet sheet, or in a bag that will prevent the air affecting it. In figure sculpture various supports for the model are required. For a bust, a single upright, with a crossbar to carry the shoulders, will suffice. For the full figure, an iron upright, the height of the figure, is the mainstay of other supports for the limbs; this is fixed in a circular plinth, constructed to revolve on a wooden boss, so that the model can be turned round without the sculptor shifting his ground. The whole is placed on a bench above the level of the floor. Most of the work is done with the fingers.

Model Parliament. Name given to the Parliament summoned by Edward I in Nov., 1295. It consisted of the magnates, two knights from every shire, and two burgesses from every considerable borough, and also representatives of the lower clergy. It was given its name because it was the model on which later parliaments were called, being representative of the nobles, clergy, and commons.

Modena. Prov. of N. Italy, in Emilia. It stretches N.E. from the Tuscan Apennines to the Po valley. It is mountainous in the S.W., but in the fertile tracts it produces wheat, wine, and hemp. Goats and sheep are reared. Area, 1,003 sq. m. Pop. 373,000.

Modena. City of Italy, the capital of the prov. of Modena. It stands in a low and fertile plain, between the Secchia and the Panaro, tributaries of the Po, and is 23 m. by rly. N.W. of Bologna, on the Aemilian Way. The splendid Romanesque cathedral, begun in 1099, has a lofty campanile and many curious carvings and statues. Other churches include S. Agostino with its memorials of the Este family, and S. Pietro. The ducal palace, built early in the 17th century, is now used for public pur-

poses. Among other buildings are the university, founded in 1683; a library containing 140,000 vols. and several thousand MSS.; a town hall, dating in part from 1194, and museums and art galleries. There are several fine open spaces and recreation grounds. The manufactures include silks, woollens, linens, hats, and leather and iron ware, and there is trade in cattle, cereals, wine, fruit, and liqueurs.

A Roman colony from 183 B.C., Modena, then called Mutina, was besieged by Mark Antony in 43 B.C. Sacked by the Huns under Attila in A.D. 452, it was afterwards taken by the Lombards. In the 11th century it was the property of the marchioness of Tuscany, afterwards being for a short time a free city. It was acquired by the Este family



Modena, Italy. Crypt beneath the cathedral chancel, containing the tomb of S. Geminiano, the patron saint of the city

in 1288, and was the capital of the duchy ruled by them until the foundation of the kingdom of Italy. Pop. 76,500.

Modena. Duchy of Italy. It dates from 1452, when the city and the district around it, which since 1288 had been in the possession of the Este family, was made a duchy for Borso d'Este. During the Napoleonic wars the duchy became part of the Cisalpine republic. In 1814 it was given to Ferdinand, a member of the Hapsburg family, who had married Maria Beatrice, the heiress of the house of Este, and he and his son reigned until the latter was driven out in 1859. See Este.

Moderates. Name used for any party of men who hold moderate views. It was applied to one of the parties on the London County Council, the other being the Progressives, from 1889 to 1904. In 1904 the name was changed to that of municipal reformers. See London County Council.

Moderation. Term used in the Presbyterian Church to denote the act of moderating, that is, calling

a minister. When a congregation meets with the local presbytery, under the presidency of the moderator, for the purpose of signing the call to a minister-elect, the meeting is said to be a moderation. If the presbytery is satisfied that the congregation are unanimous, and that there is nothing against the personal character of the minister-elect, it grants a moderation to the people of that congregation to proceed with the call. See Presbyterianism.

Moderato (Ital.). Musical term meaning at a moderate pace. It is sometimes used alone, and sometimes to modify other terms, as *allegro moderato*, i.e. moderately allegro. Sometimes it is itself qualified as *Molto moderato*, i.e. at a very moderate pace.

Moderator (Lat. *moderari*, to control). Name given to various academic and ecclesiastical officials. At Oxford University moderators are the examiners at the first public examination for degrees, commonly called moderations, abbreviated into mods. At Cambridge they are university officers who superintend the examinations for the mathematical

trips. At Dublin they are the candidates for the degree of B.A. who take first and second place in honours, and are called senior and junior moderators respectively.

The word is applied especially to the presiding officers at meetings and courts of the Presbyterian Church. Interim moderators are appointed by the local presbytery to fill a temporary vacancy in a church pending the appointment of a new minister. Moderators of local presbyteries hold office for a year, as also does the moderator of the General Assembly. In Scotland the Established Church, the United Free Church, and the Free Church each has its own moderator. Moderators were appointed in the Congregational Church of England and Wales, 1919. See Presbyterianism; Scotland, Church of.

Modernism. Name given to a tendency or school of thought in the Church of Rome. The term is associated with an effort to adjust dogmatic theology to modern discovery and to bring the Church into intellectual touch with the spirit of the age. Modernism thus

recognizes the necessity of accepting at least certain general conclusions of Biblical criticism as to the origins and historical value of the Bible. It affirms that the purpose of the author of the fourth Gospel was rather to present a construction of faith than a record of historical fact, and that the synoptic Gospels contain evidence of the influence of early theological thought upon an original record of the words and deeds of Christ.

Modernism seeks to apply the methods of critical investigation to church history, and urges that dogma has been, and ought still to be, the expression of intellectual growth and life in the Church. It also lays stress on the study of comparative religion, as showing that God has revealed Himself at many times and in many ways; and it finds in the study of alien religions a confirmation and illustration of the faith brought by a later and more perfect revelation in the Person of Christ.

Modernism stands on a platform entirely different from that of Protestantism, which definitely rejects certain dogmas of the Church of Rome as unwarranted by, or opposed to, the teaching of Holy Scripture, or as being intellectually false.

The keynote of the dogmatic teaching of the Church of Rome is authority. What has been defined as of faith by the authority of the Church must be accepted without question. The result is that the dogmatic teaching of the Church of Rome is essentially scholastic, and is defined in terms of an intellectual position which was true in the days of S. Thomas Aquinas, but is not equally true now that philosophic thought is no longer restricted to Aristotelian methods. Hence the Modernists' tendency has been consistently and emphatically condemned by the pope from time to time, notably in the encyclical *Pascendi* of Pius X in 1907. The reasons given for this condemnation are that Modernism divorces faith and knowledge, undermines the authoritative definitions of the faith, and opens the door to every kind of error both in faith and morals. In 1910 it was ordered that all clerics should expressly abjure Modernism. The leaders of the new school have been forbidden to teach, deprived of ecclesiastical position, and in some cases excommunicated. Among the more prominent of these leaders may be mentioned A. Houtin, A. F. Loisy, Baron von Hügel, and George Tyrrell. See Roman Catholic Church.

Bibliography. Modernism, P. Sabatier, Eng. trans. C. A. Mills, 1908; Modernism, a Record and Review, A. L. Lilley, 1908; Christianity at the Cross Roads, G. Tyrrell, 1909; Modernism, its failure and its fruits, M. D. M. Petrie, 1918.

Modern Painters. Treatise on art by John Ruskin, published 1843-60. The work was begun as a defence of Turner's later manner, and gradually developed into a treatise on the principles of art, a rhapsody on the glories of nature, a panegyric on Tintoretto and the Florentine masters, and eventually a vehicle for conveying the author's views generally.

The title was suggested by the publishers, Smith, Elder & Co., the author's own title having been Turner and the Ancients.

Modica. Town of Sicily, in the prov. of Syracuse. It stands in the Val di Noto, 33 m. direct and 57 m. by rly. W.S.W. of Syracuse. The site of the Sicel city Motycia, it has remains of megalithic buildings. The public buildings include library, hospital, and theatre. It is a centre for the trade in wine, oil, cattle, and fruit.

Modjeska, HELENA (1844-1909). Polish actress. Born at Cracow, Oct. 12, 1844, the daughter



Helena Modjeska,
Polish actress.

of a musician, she married an impresario, G. S. Modrzejewski, in 1861, and after playing some years on tour, made her debut at Cracow in 1865, in which year her husband died, and in Warsaw in 1868. In the latter year she married Count Bozenta Chlapowski, with whom she went to America in 1876. She had already become famous in her rendering of Shakespearean and other heroines of tragedy, and in 1877 she appeared at San Francisco, in Adrienne Lecouvreur, in which for the first time she acted in English. In Great Britain she made her particular success as Mary Stuart, Lady Macbeth, and La Dame aux Camélias. She died at Bay City, California, April 9, 1909.

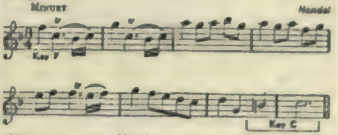
Mödling. Town of Austria. It is 8 m. S.S.W. of Vienna, at the entrance of the picturesque Brühl valley, and is a popular resort of the Viennese. It has the 15th century church of S. Othmar, and an agricultural school. Metal goods, boots and shoes are manufactured. Pop. 18,000. See Liechtenstein.

Modoc. Indian tribe, known also as the Maklaks. Their home was in Oregon, and after the settle-

ment of white men in that area there were sanguinary struggles between the two races. In 1852, and again in 1872-73, many of the Indians were killed. The few survivors live on the Klamath reservation in Oregon.

Modor or **MODRA.** Town in the Slovakia division of the Czechoslovak republic; formerly in the kingdom of Hungary. It is situated on the edge of the Little Alföld, at the foot of the White Carpathians. Pop. 5,000.

Modulation. In music, a change of key, or the passing from one scale of tonality to another. Thus, the following passes from key F to key C:



The same little piece afterwards touches the keys of D minor and G minor. When the modulations are to such related keys, they are called natural modulations; when a plunge is suddenly made to a more distant key, such as from F to B, the modulation is called extraneous. Chromatic modulation is when the change is effected by chromatic chords. Enharmonic modulation includes a chromatic or extraneous change, together with a substitution of notes, such as the key of B instead of C flat. See Key.

Module. Literally, a little measure. In architecture it is a unit of measurement used for determining the proportions of the various parts of a building. The unit varies according to the style of architecture. The system was used by Vitruvius. The word is also used in hydraulics for measuring the flow of water.

Modulus. Term employed in physics and mathematics. In the most general sense it may be defined as a measure of a quantity which depends on two or more other quantities. In mathematics it is usually a constant multiplier or coefficient involved in a given function of a variable. In a specific sense it is a number by which Napierian logarithms must be multiplied in order to obtain the corresponding logarithms in another system, usually that of common logarithms. The numerical value of this modulus is 0.43429, etc., and the value of its reciprocal by which common logarithms may be converted into Napierian logarithms is 2.30258, etc.

In physics and mechanics a modulus is a constant indicating the relation between effect produced and force applied. It is more

specifically used in regard to elasticity, the modulus of elasticity, or Young's modulus. This expresses the relationship between the stress applied to any material, say a bar of metal, either to stretch it or to compress it, and the strain, i.e. the stretch, or the measure of compression, which results from the stress. In the formulae used in connexion with this relationship, the modulus is represented by the letter E. The term is frequently defined as the stress necessary to stretch a bar to twice its original length, though as a matter of fact no material of construction can be stretched so much; it would break before such an extension could be reached. See Physics: Materials, Strength of.

Möen. Island of Denmark. It lies in the Baltic, between Zealand and Falster. It has an irregular outline, and its picturesque chalk cliffs rise to 500 ft. Farming and fishing are the industries. Stege, a seaport on the W. coast, is the capital. Area, 81 sq. m. Pop. 16,000.

Moeris, LAKE. Ancient name for a sheet of water in central Egypt, in the Fayum district. It formerly covered a considerable area. The portion still remaining is 34 m. long by 6 m. broad, and is known as the Birket-el-Kerun. Its embankment and partial reclamation were the work of Amenemhat III. On its banks was the celebrated Labyrinth described by Herodotus. See Labyrinth; Medinet-el-Fayum; consult also The Fayum and Lake Moeris, Sir R. H. Brown, 1892.*

Moesia. Prov. of the Roman empire. It roughly corresponded to the parts of Serbia and Bulgaria N. of the Balkan range. A Celtic land, it was conquered by the Romans 29-15 B.C., and by the invitation of the Emperor Valens was settled, in A.D. 375, by Visigoths, who were thenceforth called Moeso-Goths. See Goths.

Moeuvres. Village of France, in the dept. of Pas-de-Calais. It is immediately E. of Boulton Wood (q.v.), and 1½ m. N. of the Bapaume-Cambrai road on the Canal du Nord. In the Great War there was fierce fighting around the village, which remained in the possession of the Germans, in Nov., 1917. Here a company of the 13th Essex, surrounded by the enemy, fought to the last man. It was also the scene of a gallant stand by Corporal D. F. Hunter, V.C., and six men of the 1/5 batt. H.L.I. (52nd div.), in Sept., 1918. They formed the garrison of a post just N. of the village during a hostile attack. During the two days the Germans were in

occupation of Moeuvres, this party maintained their position with great gallantry, inflicting casualties on the enemy, and on the night of Sept. 19-20, when Moeuvres was retaken by the British, regained their unit without loss. See Cambrai, Battles of.

Moewe (Ger., seagull). German auxiliary cruiser used as a raider. She was a vessel of about 2,000 tons, with an armament of guns, of at least 6-in. calibre, concealed behind screens, that could be dropped when desired. Early in 1916, the Moewe, disguised as a Norwegian merchantman, escaped through the British blockading force in the North Sea. First news of her being at sea came to hand as a consequence of her sinking a number of merchant vessels.

On Jan. 16 she captured the British Appam, N. of Madeira, released some German prisoners of war aboard her, put a German crew on board, and took the steamer to Hampton Roads, U.S.A. On March 4, 1916, the Germans reported that the Moewe had returned safely to her home port, bringing with her the masters and some of the crew of a number of Allied vessels which she had destroyed. She made another raiding voyage in 1917. After the armistice the Moewe was amongst the merchant craft surrendered to Britain, and passed to the firm of Elders and Fyffes, being renamed the Greenbrier.

Moffat. Police burgh and watering-place of Dumfriesshire. It stands on the Annan, 21 m. from Dumfries and 63 m. S.W. of Edinburgh, with a station on the Cal. Rly. It is a spa having mineral springs used by invalids since



Moffat crest

about 1750; they are now the property of the burgh. These and the beautiful scenery around attract many visitors, for whom there is a hydropathic establishment, which, used as a convalescent hospital for officers in the Great War, was

destroyed by fire in June, 1921. The town owes its origin to this spa, around which centre its industrial activities. Market day, Fri. Pop. 2,100.

Moffat, GRAHAM (b. 1866). Scottish actor and dramatist. Born in Glasgow, Feb. 21, 1866, he was educated at Rosemount Academy, Glasgow, and made his first professional appearance in 1908. He first played in London in 1911, and on July 4, 1911, produced his Scottish comedy of Bunty Pulls the Strings, which ran for over 600 performances. He has played in other of his own plays, e.g. Till the Bells Ring, 1908, The Concealed Bed, 1909, A Scrape o' the Pen, 1911, and Don't Tell, 1920.

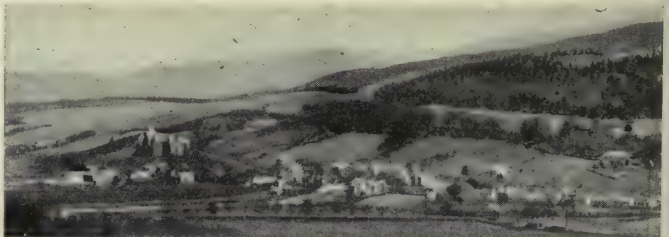
Moffat, ROBERT (1795-1883). Scottish missionary. Born at Ormiston, Haddingtonshire, Dec. 21, 1795, he



Robert Moffat

began life as a gardener. Soon he offered his services to the London Missionary Society, and in 1816 went out to S. Africa. He worked in various parts of that country until 1870, travelling about a great deal, and, indifferent to danger, doing good service in introducing Christianity and civilization to the natives. He translated the Bible into the language of the Bechuana, and wrote Missionary Labours and Scenes in S. Africa, 1842. In 1819 he married Mary Smith (1795-1870), who was as devoted to the work as he was himself, and their daughter became the wife of a colleague, David Livingstone. Moffat died at Leigh, Kent, Aug. 9, 1883. See Lives of Robert and Mary Moffat, J. S. Moffat, 1885.

Mofussil. Anglo-Indian term meaning the provinces. It is applied to the country stations and districts, or the rural parts of a district as distinct respectively from the presidency or the chief station. It comes from Arabic *mufassal* (separate, particular, hence provincial).



Moffat, Dumfriesshire. General view of the town from the west

Mogador OR *Es SUIRA*. Sea-port of Morocco. It is 130 m. from Morocco city. With a good harbour, it does a considerable trade, exporting the produce of the land. It was founded in 1760, and its chief building is the citadel. Pop. 24,000.

Mogok. Town of India, in Burma. It is celebrated for its ruby mines, and is situated on the left bank of the Irawadi, 100 m. N. of Mandalay. Pop. 11,100.



Moguer arms

Moguér. Town of Spain, in the prov. of Huelva. It stands on the crest of a hill, 6 m. E. of Huelva, and has a small port on the Rio Tinto. It is noted for its wine and brandy. Pop. 8,500.

Mogul (Arab. *mughal*, Mongol). Name applied to the empire founded c. 1526, by Babar (*q.v.*), the Mahomedan conqueror of India. Under his grandson Akbar (1542-1605) the empire was greatly extended. On the death of Aurungzebe (1707) it fell to pieces, and in 1858 it finally ceased to exist. See Akbar; Babar; India.

Mohacs. Town of Hungary. It is situated on the right bank of the Danube, 40 m. E. of Pecs, and is a rly. junction and a steamer station with some trade in coal. It has manufactures of silk, timber, and bricks. Pop. 17,000.

Mohacs is best known as the scene of two battles. The first, Aug. 29, 1526, was the defeat of Louis II (*q.v.*) of Hungary by Soliman the Magnificent, when of the whole Hungarian force of 25,000 men, 24,000 fell on the field, including Louis himself. This defeat left the road open to Buda, which was entered and sacked by the Turks, Sept. 12. The second battle, Aug. 12, 1687, saw the defeat of the Turks by the Austrian army of Charles of Lorraine, and was one of the decisive battles in the campaign which eventually drove the Turks out of Christian Europe. Pron. Mo-hatch.

Mohair (Arab. *mukhayyar*, choice, select). Fleece of the Angora goat. Mohair has been imported from Turkey since the 17th century at least, when it was used for making camlets for cloaks. Gimp, fancy buttons, and button-holes were made of mohair twist, hair for the purpose being brought over in the form of spun yarn. Mohair spinning has been carried on in Bradford, Yorkshire, on a large scale since 1848. The better qualities are taken for dress goods, and others are made into plushes,



Mogador, Morocco. City water tower and aqueduct

braids, astrachans, and heavy cloths. Turkey mohair normally commands the best prices, but there are at the Cape three times as many Angora goats as in Asia Minor. Cape kids from the young of the South African goats is the finest procurable hair. Angora goat ranching has extended much in the Western U.S.A., and the manufacture of mohair goods has largely increased in America. See Angora; Wool.

Mohammed. Name, a variant of Mahomet, of six sultans of Turkey. The two most important (II and V) are separately noticed.

Mohammed I reigned 1413-21. By constant warfare he recovered territories lost by his father, Bayazid, who had been overwhelmed by the forces of Timur. This sultan appears to have been a man of culture. The reign of Mohammed III, 1595-1603, was mainly taken up in fighting against Austria, but before its end he was involved in a war with Persia, and had to contend with an insurrection in Constantinople. Mohammed IV reigned from 1648-87. This was the period when the Kuprili family was directing the affairs of Turkey, and during the reign war was carried on with Austria and Poland.

Mohammed VI became sultan in 1918. Born Jan. 12, 1861, he was the son of sultan Abdul Medjid, and the brother of Mohammed V, whom he succeeded July 3, 1918. See Turkey: History.

Mohammed II (1430-81). Sultan of Turkey, known as Mohammed the Conqueror (El Fâtyh).



Mohammed II, Sultan of Turkey

Son of Murad II, he was born at Adrianople, and succeeded his father in 1451. In 1453, at the head of over 150,000 men and a fleet of 400 vessels, he captured Con-

stantinople from the Greek emperor, Constantine Palaeologus, after a siege of 53 days. Making Constantinople his capital, he embarked on a long series of wars which made his name feared throughout Europe. He subdued Serbia in 1459, in spite of his memorable defeat at Belgrade by Hun-

yadi, 1456, made himself master of the Morea, 1460, of Trebizond, 1461, of Lesbos, 1462, and of Wallachia and Bosnia, 1463. In 1472 he overcame the Persian forces in Cappadocia, and took Caffa in the Crimea from the Genoese in 1475. In 1478 he forced Venice to sign peace and surrender Skutari in Albania, and in 1480 he attacked the Neapolitans and captured Otranto. Shortly afterwards he died at Gebze, and was succeeded by Bayazid II. See Turkey: History.

Mohammed V OR **MEHMED RESHAD** (1844-1918.) Sultan of Turkey. Born Nov. 3, 1844, younger brother of Sultan Abdul Hamid II (*q.v.*), he lived in dull and isolated obscurity most of his life. A student and deeply religious, throughout the reign of his brother he only emerged into prominence on the deposition of Abdul Hamid on April 27, 1909, on which day he was proclaimed his successor. He succeeded to a heritage of misgovernment, and throughout his reign was a mere figurehead, the real power being in the hands of the Young Turk party, headed by Enver Pasha, Talaat Bey, and others. The Italian and Balkan wars and the increasing influence of Germany in Turkish affairs were troubles with which he had to contend. He is believed to have been by no means willing to side with Germany in the Great War, and for a while did what he could to avoid a rupture with the Allies, but was overruled. He died July 3, 1918, and was succeeded by his brother Mohammed VI, who resigned Nov., 1922. See Turkey.



Mohammed V, sultan of Turkey, 1909-18. Right, Mohammed VI, sultan, 1918-22

Mohammerah OR MUHAMMERA. Seaport of Mesopotamia. It is situated on the Karun, near its junction with the Shatt el Arab, at the head of the Persian Gulf. Lying about 25 m. S.E. of Basra, it and the country in the immediate neighbourhood form a semi-independent state, under the suzerainty of Persia, but closely related politically to Great Britain. During the Great War its ruling sheikh joined the Allies, and the British had troops in the town, as well as in other towns in the Karun valley, for the protection of the Anglo-Persian Oil Company's pipe lines and offices. The town has a trade in dates, wool, opium, and horses. Pop. 10,000.

Moharram OR MUHARRAM (Arab., sacred). First month of the Mahomedan year; also a religious celebration during that month. The celebration is observed by Shiites as a time of mourning and fasting to commemorate the martyrdom of Hasan and Hussein, grandsons of Mahomet. A miracle play is performed on the anniversary of the death of Hussein. In India the Moharram ceremonies are observed by both Sunnites and Shiites, and also by Hindus, especially Marathas, as a festival of rejoicing rather than of mourning, and are sometimes called by British soldiers "Hobson-Jobson" (*q.v.*), a corruption of the words "Hasan, Hussein," as chanted by the worshippers.

Mohawks (Narraganset, man-eaters). North American Indian tribe of Iroquoian stock. Formerly one of the Six Nations, their location between the St. Lawrence and the Catskills led to early trade relations with the Dutch (1614), who exchanged firearms for pelts. They ultimately migrated to Canada, and in 1916 they exceeded 5,000. See American Indians; Six Nations.

Mohawks OR MOHOCKS. London fraternity of dissolute young men of fashion in the early 18th century, the name being adopted from the Mohawk tribe. They were the successors of the so-called "scourers," and their favourite exploits were beating the watch, slitting noses, and rolling women in barrels down Snow Hill. The Tories endeavoured to saddle the Whigs with the Mohawks' delinquencies; in his *Journal* to Stella Dean Swift says: "They are all Whigs." A royal proclamation was issued against them, March 18, 1712. Another Indian tribe has given its name to the 20th century Paris street ruffian, the Apache (*q.v.*).

Mohicans. Name popularly applied to a N. American Indian tribe, officially called Mahicans.

An allied tribe are called Mohegans (wolf). Of Algonquian stock, the former moved from the Hudson valley into Pennsylvania, the latter northward into New England. Both are extinct. The Mahicans lived in communal bark-houses, and their villages were frequently stockaded. The men wore feather mantles, and the women large quantities of wampum (*q.v.*).

Mohilev (Russian, *Mogilyof*). Government and town of W. Russia. The government is traversed N. to S. by the Dnieper, and is bounded by the governments of Vitebsk, Smolensk, Chernigov, and Minsk. The inhabitants, mostly White Russians, are chiefly occupied in agriculture. The main industries are tanning, distilling, brewing, and the manufacture of paper, tobacco, and matches.

The town of Mohilev is the capital of the government of the same name. It stands on the Dnieper, 85 m. S.W. of Smolensk. There is considerable trade in leather, corn, salt, sugar, hemp, and timber. It is the seat of a Greek Catholic bishop. In the 14th century Mohilev belonged to Russian princes, but in the 15th became the property of the kings of Poland. At the first partition of Poland, 1772, it was annexed to Russia by Catherine II. Area, 18,500 sq. m. Pop., government, 1,700,000; town, 54,000.

Mohilev. Town of W. Russia. It is in the government of Podolia, on the Dniester and the Zhemrinka-Novoselitsy rly., 58 m. S.E. of Kamenets-Podolsk, and near the frontier of Bessarabia. The chief industries are shoemaking and silk-worm-rearing; considerable trade is done in cereals, flax, timber, and dried fruits. Pop. 33,000.

Mohmand. Pathan tribe of the Indo-Afghan frontier. Iranian Aryans, speaking a N. Pushtu dialect, their physique has suffered from their occupation of the lowland valleys N. of the Afridi. The British campaign of 1897 secured their submission. The clans within the North-West frontier provinces are assured by treaty of their full Afghan privileges. In 1915-16 the Mohmands, stirred up by German emissaries, gave the Indian government considerable trouble. In Nov., 1916, they raided Indian territory and an action was fought with the British near Peshawar, the latter using aeroplanes for the first time in Indian warfare. The raiders were defeated and driven back, with the loss of over 100 killed.

Mohmand Country. Section of the North-West Frontier Province, India. It lies N. of the Khyber Pass and the Kabul river, in a

region of rugged barren hills. The population includes those Mohmands who live E. of the Durand line. The district owes its importance to the route through it, which obviates the necessity of using the Khyber Pass.

Mohun, BARON. Irish title borne from 1628 to 1712 by the family of Mohun. John Mohun (*c.*



4th Baron Mohun,
Irish peer
After Kneller

1592-1640) was the first holder, but the best known is Charles Mohun, the 4th. A son of the 3rd baron, he soon became known for his riotous conduct. In 1692 he helped a friend, Rich-

ard Hill, in an attempt to carry off the actress, Mrs. Bracegirdle, this leading to a scuffle between him and William Mountfort, the actor, in which the latter was killed. Mohun was tried by his peers and acquitted, pleading that he killed his man in fair fight, and in 1699 he was similarly relieved from a charge of murder. On Nov. 15, 1712, he fought a duel in Hyde Park with the 4th duke of Hamilton and both were killed, an incident immortalised in Thackeray's Henry Esmond. The barony thereupon became extinct.

Moi. Annamese collective name for aboriginal hill-tribes in French Indo-China. Estimated (1919) at 600,000, they display some ethnic admixture on the fringes of their upland habitat, but are essentially long-headed, level-eyed Indonesians, with a primitive social organization and animistic beliefs based on spirit-worship and witchcraft. See Asia; Kha.

Moidore (Port. *moeda d'ouro*, money of gold). Obsolete Portuguese gold coin. Valued at 4,800



Moidore. Obverse and reverse of the Portuguese coin, $\frac{1}{2}$ actual size

reis, or a little over a guinea nominally, it was not minted after 1732. The coin was also known as the lisbonine, and was in use in many countries of W. Europe.

Moir, DAVID MACBETH (1798-1851). Scottish humorist. He was born at Musselburgh, Jan. 5, 1798, and spent his life there engaged in medical practice. Over

the signature Delta he contributed much verse to Blackwood's Magazine, and was also the author of one or two works on subjects connected with his profession. He is remembered chiefly by his *Autobiography of Mansie Wauch*, a diverting picture of humble Scottish life in the style of Moir's more famous contemporary Galt. Moir died July 6, 1851.



David Moir,
Scottish humorist

Moirai. In classical mythology, Greek name for the Fates, goddesses who presided over the destiny of man. The Latin name for them was *Parcae*. See *Fates*.

Moiré (Fr., watered). Term applied to fabrics bearing an irregular wavy or jagged figure produced in cloth finishing. This watered effect is the same that is seen when two layers of light cloth, such as plain cotton voile, are superimposed. The permanent watered or moiré effect is obtained by the use of water and pressure. The cloth is laid in layers, and an impression of the back of one layer is made on the face of the next. Silk fabrics so treated are generally named *moirés*, worsted fabrics *moreens*, and cotton fabrics *moirettes*. The perfection of the result is judged by the largeness of the size of the figures.

Moissac. Town of France, in the dept. of Tarn-et-Garonne. It lies on the right bank of the Tarn, 17 m. by rly. W.N.W. of Montauban on the important Canal Latéral, and is a centre of local agricultural and wine trade. The S. portal of the ancient church of S. Pierre is a remarkable example of 12th century Gothic sculpture. The adjoining cloister, built c. 1100, is also part of the remains of a famous abbey, founded in the 7th century, affiliated to the order of Cluny in the 11th, and suppressed during the Revolution. Pop. 8,700.

Moissan, HENRI (1852-1907). French chemist. Born in Paris, Sept. 28, 1852, he became a demonstrator at the school of pharmacy, 1879;



Henri Moissan,
French chemist

professor of toxicology, 1886; and professor of mineral chemistry, 1889. In 1900 appointed professor of chemistry at

the Sorbonne, in 1906 he was awarded the Nobel prize for chemistry. He died in Paris, Feb. 20, 1907.

Moissan is famous for his researches on, and isolation of, fluorine, for which he received the Lavoisier prize in 1887. From a study of the three states of carbon he was able to announce in 1893 the production of artificial diamonds by the sudden cooling of a molten iron mass containing dissolved carbon. This announcement caused a great sensation at the time, but the diamonds produced by this method have never been commercially successful. Moissan was also responsible for the development of the electric furnace which he used in many of his studies of the so-called infusible compounds, and for an improved method of acetylene production.

Moirve, ABRAHAM DE (1667-1754). Anglo-French mathematician. Born May 26, 1667, at Vitry in Champagne, he came to England 1688, where he remained for the rest of his life. He became a personal friend of Sir Isaac Newton, to whom he owed much of his mathematical training. De Moivre contributed a large number of mathematical papers to the *Philosophical Transactions*, and was made a fellow of the Royal Society 1697. His chief title to fame is the theorem in trigonometry known by his name, a theorem which opened up a large branch of mathematics. His book *The Doctrine of Chances*, first published in 1718, was for a long time a classic. He died Nov. 27, 1754, in London. See *Trigonometry*.

Moji. Seaport and town of Japan, in Kyosiu. It is in the N.E. of the island on the Strait of Shimonoseki, at the entrance to the Inland Sea. The chief export is coal; others of minor importance are cotton thread, refined sugar, cement, and timber. Ginned cotton, raw sugar, petroleum, and bean-cake are imported. The port became important in 1887, when it was made the terminus of the Kyosiu rly. Its pop. has increased from 3,000 in 1889 to 56,000; its growth was greatly stimulated by the traffic due to the war operations of 1894-95, 1900, and 1904-5.

Mojos. Spanish name for a South American Indian tribe of Arawakan speech, between the Beni and Guapore rivers, Bolivia. Numbering about 30,000, they devote more attention than the neighbouring Chiquitos to hunting and fishing, and have partly abandoned bows and arrows for the lasso. Best of Amazonian boatmen, their dug-outs are prepared

with the aid of fire. They use lip-pendants of quartz or resin-filled canes. *Pron. Mohos.* See *American Indians*.

Mokshansk. Town of E. Russia. It is in the government, and 25 m. N.W., of Penza, on the Moksha, a tributary of the Oka. Potash and ropes are manufactured, and there is considerable trade in cereals, tar, salt, and agricultural products. Pop. 10,000.

Mokume (Jap., wood grain). Name given to a beautiful art metal product made by soldering together, one upon the other, thin sheets of gold and silver, and of certain copper alloys which have been "pickled" to give them various prominent colours. Conical holes are drilled into the surface of the soldered mass through the sheets, and grooves are cut in the surface, to various depths. The mass is then hammered out until the holes or grooves have disappeared, the final product being a beautifully variegated surface suggesting a slab of finely grained and polished wood.

Mola di Bari (anc. *Turres Julianae*). Harbour of Italy, in the prov. of Bari. It stands on the Adriatic, 12 m. by rly. S.E. of Bari. Cattle, grain, wine, and oil are exported. Pop. 14,000.

Molasse. In geology, name given to a belt of grits, limestones, and clays of Switzerland, Bavaria, etc. The rocks belong to the Oligocene system (q.v.). *Pron. mō-lass.*

Molasses. By-product in sugar refining, the uncrystallisable part of the sugar. It is a thick, brownish-yellow liquid useful as a food. Rum is produced by fermenting molasses. See *Rum*; *Sugar*.

Molassine. Name for a preparation of desiccated peat, saturated with the molasses of beet sugar, as a food for horses, oxen, sheep, pigs, and poultry. The proportion of sugar exceeds one-third of the weight.

Molay, JACQUES BERNARD DE (c. 1243-1314). French grand master of the order of the Templars. Born at Molay, in the Juras, he entered the Templars at Beaune about 1265 and early distinguished himself in Palestine. Elected grand master of the order in 1298, he retired with the Templars to Cyprus in 1299 until summoned to France by Pope Clement V in 1306. On Oct. 13, 1307, he was arrested with all the members of his order in France by order of Philip the Fair. Put to the torture, he confessed the truth of certain serious allegations against the Templars, and spent several years in prison before being brought up for sentence. He then recanted his

confession, but with a colleague, Gaufrid de Charney, was condemned as a heretic and burnt at the stake, March 18, 1314. See Templars.

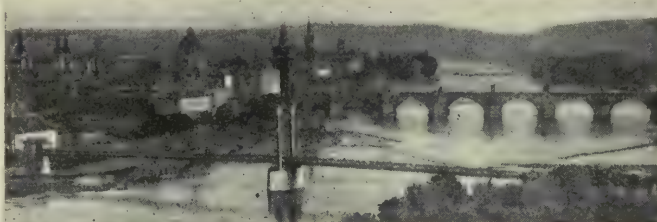
Mold. Urban dist. and market town of Flintshire; also the county town. It is 13 m. from Chester and 182 m. from London, with a station on the L. & N.W. Rly., and lies in the centre of important lead and coal mines. There are manufactures of bricks, tiles,



Mold arms

nails, beer, etc., and also works for making tinplate. The chief buildings are S. Mary's Church, the old gaol, now the property of the Jesuits, the county buildings and the town hall and library. The town had a castle in the Middle Ages, and earlier there was a Roman camp here on a hill, now called Bailey Hill. The name is a corruption of Mons Altus, the white hill. Market days, Wed. and Sat. Pop. 4,900.

Moldau or **ULTAVA**. River of Czecho-Slovakia, in Bohemia. It rises in the S. of the plateau in the Bohemian Forest, near the Austrian frontier, and flows 265 m. northwards to join the Elbe (Labe) at Melnik, through Prague and Budejovice (Budweis), to



Moldau. The Bohemian river at Prague, showing the Charles Bridge, built in 1357

which it is navigable. Its tributaries are the Watawa and Berounka on the left, and Luschnitz and Sazava on the right; the valley drops in terraces from 2,500 ft. in the S. to below 400 ft. at Melnik. Between Prague and Budejovice it flows through a deep and narrow gorge; this limits the navigability of this section, which has been canalised. From Budejovice leads a canal to the Danube.

Moldavia. District of Rumania. It is of elongated shape, Wallachia, Transylvania, and the Bukowina bounding it on the W., and Bessarabia on the E. The Carpathians on the W. are its most striking natural feature, and its rivers, the chief of which is the Sereth, descend

from them in high terraces to the Pruth, its frontier on the E. Jassy is the capital, and other large towns are Botosani and Bacau. It is divided into 13 administrative districts. Area about 14,700 sq. m. Pop. nearly 2,400,000.

In the 13th and 14th centuries Moldavia, which takes its name



Mold, Flintshire. Parish church of S. Mary, from the south. Top, right, ruins of the medieval castle

Valentine

from the Moldava, a tributary of the Sereth, was an independent state, and under Alexander the Wise and Stephen the Great it flourished in the 15th century, the latter prince defeating a powerful combination of Poles, Magyars, and Turks at Rahova in 1457. Conquered by the Turks in 1511, it was farmed out by them to the



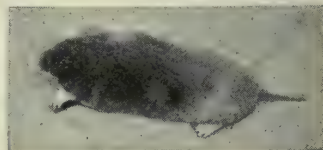
17 against the Austro-Germans. See Rumania; Rumania, Conquest of.

Mole. Pigmented spot on the skin, usually raised, and covered with hair. Their removal usually involves a surgical or electrical operation.

Mole. Name given to a large, widely distributed family of insectivorous mammals

(*Talpidae*). The European mole (*Talpa europaea*), common in Great Britain, is about 6 ins. in length and covered with velvety greyish black fur. The hairs are set vertically in the skin, a distinct advantage to a burrowing animal, as they will lie in any direction; the body is rounded, and the fore limbs are short and provided with singularly long and strong claws. The forward position and the paddle-like action of these limbs make them powerful digging instruments. The nose is pointed, the eyes very small, and the external ears absent. A curious skeletal feature of this animal is the breastbone, which is keeled somewhat like that of a bird, and extended so far forward and upward as to involve the collar bones. The muscular development of the mole is remarkable for so small an animal.

The mole spends practically all its time underground, burrowing not far below the surface in search of the worms and grubs on which it feeds. The small heaps on the lawn are not the homes of the animal, but simply the mould cast out in the course of burrowing, whence its popular name, mould-warp, earth-caster. The hill or nursery of the



Mole. Specimen of the common European variety

Greek Phanariote princes, who had a certain measure of independence. Partly through the efforts of Russia, Moldavia and Wallachia were liberated from the Turkish yoke in the 18th and 19th centuries.

The union of the principalities of Moldavia and Wallachia under the name of Rumania was proclaimed at Jassy and Bukarest Dec. 23, 1861, but they had been virtually united two years before under Col. Cuza, later styled Alexander I, who had been elected hospodar or prince of Moldavia and Wallachia in 1859. During the Great War the Rumanians, supported by the Russians, successfully defended Moldavia in 1916-

mole is much larger, and is usually constructed in an open field, but always near to a water supply. It consists of a central chamber a few inches below the surface, often surrounded by several galleries and tunnels. The nest chamber is lined with grass and leaves, and is apparently only used once. One litter is produced in the year, usually numbering three or four young ones, born in May or June.

Feeding entirely on worms, grubs, and insects, the mole is harmless and useful to the agriculturist. But it does a certain amount of damage in burrowing among newly-sown seed, and mole casts are both unsightly and inconvenient in fields and gardens, with the result that in most districts the mole is relentlessly trapped. See Shrew-Mole.

Mole (Lat. *moles*, mass). Jetty projecting from the land into water and serving as a pier, or as a pier and breakwater combined. It follows that the top surface must be formed to accommodate traffic, and that at least for a portion of its length boats may moor or berth alongside for loading or discharging cargoes.

The terms mole and pier are sometimes used indiscriminately, but strictly speaking the former is of solid construction. The construction of moles follows generally that of certain types of breakwaters.

A harbour may be formed by constructing two moles, the outer ends of which approach each other, leaving a sufficient opening for the safe passage of vessels in and out; in other cases a single mole may serve the purpose. Moles are sometimes constructed with the storm side at a high level and the lee side at a lower level, so as to provide shelter and berthing accommodation for vessels free from the effect of breakers. Where moles serve as piers the equipment is similar. See Breakwater; Harbour; Zeebrugge.

Mole, River of England. It rises in Balcombe forest, N. Sussex, and flows 30 m. through Surrey to the Thames near Molesey. It flows through the Dorking Gap in the N. Downs between Dorking and Leatherhead, near which in dry seasons the water disappears in holes called the Swallows.

Molé, Louis Mathieu, Comte (1781-1855). French statesman. Born in Paris, Jan. 24, 1781, his youth was spent with his mother in exile, his father having lost his life in the Terror. He returned to France during the Empire and in 1806 became master of requests to Napoleon. In 1809 he was made a count, and four years later

minister of justice. On the restoration, Louis XVIII accepted his allegiance and confirmed his title,



Comte Molé,
French statesman

1836 he became premier, but, quarrelling with Guizot and in open hostility to Thiers, he was unable to make headway against the opposition, and resigned in 1839. He died Nov. 23, 1855.

Molé, Mathieu (1584-1656). French politician. A son of Édouard Molé, a lawyer who had helped Henry IV to secure the throne, he was educated at Orleans and became a lawyer. Prominent in public affairs during the time of Richelieu, in 1641 he was made president of the parlement in Paris. He was its spokesman when the members withstood Anne of Austria and Mazarin, and his conduct in Aug., 1648, in defying an angry mob, proved him a man of courage. He acted as a peacemaker during the Fronde, and died Jan. 3, 1656. Molé left some Memoirs, published 1855-57.

Mole Cricket (*Gryllotalpa vulgaris*). Orthopterous (straight-winged) insect, common in Central and S. Europe, less frequently found in Great Britain. It is a member of the cricket tribe, lives underground, and preys upon worms, insects, and vegetation. It resembles the mole in habits, and its broad, modified fore limbs form excellent digging implements. The insect is nearly 2 ins. long, yellowish-brown in colour, and covered with fine, downy hair. It occasionally takes flights by night. See Cricket.

Molecule. Smallest particle of matter that can exist independently, whilst retaining the distinctive properties of the original substance.

The term molecule is the diminutive of the Latin word *moles*, a mass, and was first applied by Avogadro in 1811 to distinguish the smallest unit of matter with which physical phenomena are concerned, from the atom. It had always been a theory of the philosophers that there is a limit to the divisibility of matter, and these imaginary ultimate particles were termed atoms. John Dalton (1766-1844) was well acquainted with this old physical theory and was the first to apply it to chemistry.

He discovered the law of multiple proportions and found that the atomic doctrine enabled it to be easily understood.

It has been shown, however, of recent years that atoms are not the irreducible minima which Dalton supposed, but that by electrical methods they can be split up into what are called electrons or corpuscles.

This does not interfere with the utility of the atomic theory as a basic chemical law. Some molecules contain only one atom, others are composed of several atoms. A molecule of sugar is thus more complicated than a molecule of gold. Molecules are not divisible by the mechanical or physical changes of the substance, but are readily broken up by chemical reactions or by an electric current. When such a division occurs there is always a readjustment.

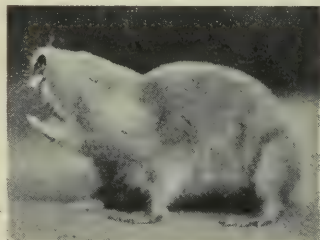
The molecular theory of matter supposes that matter is not a continuous structure, but is discrete, i.e. made up of distinct minute particles or molecules. The theory was held long before experimental evidence supplied proofs of its reality, to account for the compressibility and liquefaction of gases. Molecules, it is assumed, are in a state of perpetual motion, this taking different forms according to whether the matter is gaseous, liquid, or solid. In gases the molecules lead a more or less independent existence, while in solids the mobility is comparatively low. The molecules of a liquid have more freedom than those of a solid, as the liquid at once assumes the shape of the vessel in which it is placed. Applied as an explanation of the non-chemical and non-electrical properties of gases in terms of the molecular structure of matter, this is known as the "kinetic theory of gases."

Lord Kelvin gave an idea of the size of molecules by stating that if a drop of water, the size of a pea, were magnified up to the size of the earth, each constituent molecule being enlarged in the same proportion, the molecules would appear somewhat smaller than cricket balls. The smallest particle of a substance which can be separated mechanically contains many million molecules. By means of the ultra-microscope it is possible to obtain a good idea of what molecules are like. In this form of microscope a strong light is focused upon the material being examined, so that the light enters at right angles to the direction in which the observer is looking through the microscope. If, now, a

liquid containing colloidal gold which, when viewed against the light, appears to be quite clear and free from sediment, is examined under the ultra-microscope, it appears to consist of innumerable bright particles in constant motion, exactly as is assumed by the kinetic theory to take place in gases. These particles have been measured and are comparable in magnitude to molecules. The measurements employed in the case of these operations are necessarily very minute. The motion which is observed under the ultra-microscope is spoken of as the "Brownian movement," as it was first noticed by Brown in 1827 whilst examining the behaviour of lycopodium when placed on water. See Atom; Gas.

Molenbeek OR MOLENBEEK S. JEAN. Town of Belgium, in the prov. of Brabant. A suburb of Brussels, it lies to the W. of the capital, on a branch of the river Senne. The Canal de Charleroi has an important dock here, and there are industries in textiles, soap, rly. materials, metal works, etc. It was in German occupation throughout the Great War. Pop. 60,000.

Mole Rat (*Spalax*). Genus of rodents, related to the rats, but resembling moles in general appear-



Mole Rat. Specimen of the South European rodent resembling a mole

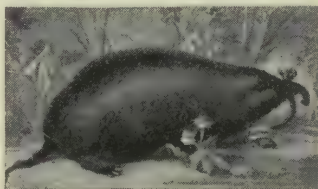
ance. They are blind, their eyes being beneath the skin. They burrow underground, seeking the roots and bulbs on which they feed. The typical species (*S. typhlus*) is found throughout S.E. Europe, Asia Minor, Persia, and Lower Egypt.

Mole St. Nicolas. Harbour of Haiti, near the N.W. point of the island. It stands on a deep bay enclosed by a peninsula of the same name, overlooking the Windward Passage between San Domingo and Cuba. N. of the town is Cape St. Nicolas.

Molesey OR MOULSEY. Two parishes in Surrey, East and West, forming an urban district. They stand on the right bank of the Thames, 2 m. from Kingston-on-Thames, with a station on the L. & S.W. Rly. Known as a boating centre, a regatta is held here

yearly. Near here the Mole enters the Thames, hence the name. Pop. 6,500.

Mole Shrew. Genus of insectivorous mammals, related to the true moles, found in N. America and Japan. In appearance the



Mole Shrew. The small insectivorous mammal found in N. America and Japan

mole shrew closely resembles the common mole, but is much smaller. It burrows beneath the surface of the soil, and feeds upon small worms and insects. See Shrew.

Moleskin. Term applied to the velvety fur of the mole and to a cloth resembling it. The best real moleskins are dark blue, and come from the Cambridgeshire Fens. The cloth is a strong, soft cotton fustian, used for labourers' clothes, gun-cases, etc. The surface is shaved before dyeing. See Fur.

Molesworth, Viscount. Irish title borne since 1716 by the family of Molesworth. Robert Molesworth, the first holder, was an English and an Irish M.P., and also served as ambassador to Copenhagen. His son, John, the 2nd viscount (d. 1726), was also an ambassador, while Richard, the 3rd, was a soldier, reaching the rank of field-marshal and being commander-in-chief in Ireland. Direct heirs failed when the 4th viscount died in 1793, but a cousin succeeded and the title is still held by the Molesworths. In 1906 George (b. 1867) became the 9th viscount. The family has a long connexion with the Irish town of Swords.

Molesworth, Mary Louisa (1839 - 1921). British author. Born in Holland in May, 1839, the

daughter of Charles Augustus Stewart of Highleigh, Cheshire, she amused herself as a child by writing stories, and developed a genius for writing for the

young. Many of her books were written under the pen-name of Ennis Graham. In 1861 she married Richard Molesworth (d. 1900), a nephew of the 7th Viscount Molesworth. Her first novel, *Lover and Husband*, appeared in 1869, and notable books in a long list of its successors are *Carrots*, 1876; *The Cuckoo Clock*, 1877; *The Adventures of Herr Baby*, 1881; *The Laurel Walk*, 1898; and *The Story of a Year*, 1910. She died July 21, 1921.

Molesworth, Sir William (1810-55). British politician. Born in London, May 23, 1810, he



Sir W. Molesworth, British politician

After Sir J. W. Gordon

succeeded to his father's baronetcy in 1823, and in 1832 was elected M.P. for East Cornwall. In 1835 he founded the London Review, assisted by J. S. Mill as editor. A staunch Radical, he represented Leeds, 1837-41, and Southwark, 1845-55. In 1853 he entered Lord Aberdeen's cabinet as first commissioner of works, in which capacity he forwarded the building of Westminster Bridge. He had always been keenly interested in colonial matters, and much was hoped from his appointment as colonial secretary in July, 1855, but he died Oct. 22 of that year.

Molfetta. Harbour of Italy, in the prov. of Bari. It is on the Adriatic 16 m. by rly. N.N.W. of Bari, has shipbuilding yards, and trades in wine, oil, almonds, and nitre. Its Romanesque cathedral, now the church of S. Corato, dates from the 13th century. Pop. 40,000.



Molesey. Air view of the Thames looking upstream from Molesey Lock towards Tagg's Island

MOLIÈRE: CREATOR OF MODERN COMEDY

A. A. Tilley, M.A., Author of *From Montaigne to Molière*

This Encyclopedia contains articles on Molière's plays. See Comedy; France; Literature; and articles on Corneille, Racine, and other great names in French Literature

Jean Baptiste Poquelin, called Molière, the creator and the greatest master of modern comedy, was born in Paris in Jan., 1622, a son of Jean Poquelin, an upholsterer, who was employed by the court and was apparently in affluent circumstances. His mother was Marie Cressé, and he was educated at the fashionable college of Clermont, where he studied the works of Aristotle. He was destined for his father's business, but at the age of twenty-one, having conceived a strong passion for the stage, he founded with some friends a theatrical company, *L'illustre Théâtre*, which played unsuccessfully at Paris for two years. They then tried their fortunes in the provinces, and after five years of struggle and hardship achieved a considerable dramatic reputation. In 1658 they returned to Paris, and two years later were definitely established in the theatre of the Palais Royal.

In 1659 Molière made his début in social comedy with *Les Précieuses Ridicules*, and in 1662 he produced his first great comedy, *L'École des Femmes*. In the same year he married Armande Béjart, a girl of twenty. She was a coquette and the marriage was unhappy. Molière's principal plays besides the two already mentioned are *Le Tartuffe*, 1664; *Don Juan*, 1665; *Le Misanthrope*, 1666; *Amphitryon*, 1668; *L'Avare*, 1668; *Le Bourgeois gentilhomme*, 1670; *Les Femmes savantes*, 1672; and *Le Malade imaginaire*, 1673. Slighter, but of excellent quality, are *L'École des Maris*, 1661; *Le Mariage forcé*, 1664; *L'Amour médecin*, 1665; *Le Médecin malgré lui*, 1666; *Le Sicilien*, 1667; and the remarkable *Critique de l'École des Femmes*, 1663, which is of capital importance for the understanding of Molière's conception of his art.

Molière was a first-rate actor of comedy, his acting, like Garrick's, being distinguished for vivacity of expression and gesture. He was also an admirable theatrical manager, devoted to the interests of the company, and sparing no pains in the rehearsal of his pieces. As a writer of comedy, he is unrivalled in his mastery of the whole gamut of laughter, from the most delicate humour to the broadest farce. Though in many of his plays, from *Le Tartuffe* onwards, there is a latent element of tragedy, it is the comic aspect of life that inspires

his imagination and gives the dominating colour to his work. We laugh at *Tartuffe* even while we fear him; we laugh at *Alceste* even while we pity him. In the one Molière shows us the ridiculous side of a criminal, in the other the ridiculous side of a lovable man of virtue.

But he aspires to correct men as well as amuse them, so he ridicules their vices and follies, especially those which threaten the social fabric or its true basis, the family. In the name of common-sense and truth, he wars against hypocrisy and superstition, against atheism and libertinism, against avarice, egoism, and vanity, against *précieuses*, prudens, poetasters, bores, pedants, professional humbugs, smug provincials, and smirking courtiers. Misled by the titles of some of his plays, e.g. *Le Misanthrope*, *L'Avare*, *Le Malade imaginaire*, some critics have accused him of creating abstract types rather than individuals. But his great characters, *Tartuffe*, *Don Juan*, *Alceste*, *Célimène*, *Harpagon*, have the breadth, the complexity, the individuality of real life. As for his minor characters, he creates them at a single stroke. They are alive the moment they appear on the stage.

A special word is due to his female servants. Honest, loyal, and outspoken, the very embodiments of common-sense, they stand for Molière's hatred of affectation and intellectual arrogance; they are the representatives, so to speak, of



Molière, from the bust by J. A. Houdon
Comédie Française, Paris

his comic muse. Further, his characters are true to nature. There are no super-men and, except in his broader farces, no caricatures. Just as in real life, they are judged differently by different readers and different ages; there can be no better proof of their absolute fidelity. Some of his plays, e.g. *Don Juan*, *L'Avare*, *Le Bourgeois gentilhomme*, in their looseness of construction bear witness to the hurry in which they were written, but when Molière had time at his disposal he could build up his drama with a master's hand. If his *dénouements* are often weak and mechanical, it is because he cares even more for life than for art. His feeling for dramatic effect, for movement and action, is unrivalled. Even when there is little or no external action, as in *Le Misanthrope*, the dramatic interest never flags, and the action, though chiefly internal, is developed in a strictly logical sequence.

Molière's language, though mostly admirable, is occasionally, under the pressure of time, involved or careless. This has proved a stumbling-block to some critics, but its dramatic qualities make it a joy to actors. His versification at its best is easy, spirited, and vigorous. *L'Étourdi*, 1653, his earliest comedy, is brilliantly written throughout, and in the *vers libres* of *Amphitryon* he shows the highest skill of the versifier's art. Molière died in Paris, Feb. 17, 1673, and was buried in the cemetery behind the church of St. Joseph.

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From a portrait of
Lebrun's school

J. B. P. Molière.

Molina, Luis (1536-1600). Spanish theologian. He was born at Cuenca, and became a Jesuit



in early manhood. He was for a time a tutor at Coimbra, and then for 20 years was professor of theology at Evora. In his later years he was professor of moral theology at Madrid, where he died Oct. 12, 1600. His chief literary work was his *Agreement of Free-will with the Gifts of Grace*, 1588, in which he seeks to harmonise the freedom of the will with divine predestination, and his system is that still taught in the Jesuit colleges. The long dispute on this subject between the Molinists and adherents of S. Thomas Aquinas was ended by a papal decree in 1607 permitting the teaching of both doctrines.

Molinari, Gustave de (1819-1911). Belgian political economist. Born at Liège, and educated in medicine at Brussels, he worked as a political journalist in Paris, 1843-51. Returning to Brussels, he was appointed professor of political economy there, and subsequently at Antwerp. He was back in Paris by 1857, where he edited *Le Journal des Débats*, 1867, and *Le Journal des Économistes*, 1881. He was a prolific writer, his works including *L'Évolution Économique du XIXe Siècle*, 1880; *Théorie de l'Évolution*, 1908.

Moline. City of Illinois, U.S.A., in Rock Island co. On the Mississippi river, 3 m. E. of Rock Island, it is served by the Chicago, Milwaukee and St. Paul and other rlys. and the Hennepin Canal. Agricultural implements are manufactured, and there are machinery, steel, carriage, wagon and motor vehicle works, saw and planing mills, etc. Water-power is obtained from Rock Island Channel. Settled in 1832, Moline became a city in 1855. Pop. 30,700.

Molinos, Miguel de (1628-96). Spanish mystic. He was born of a noble family at Muniesa, Aragon, in June, 1628, became a priest, and in 1665 went to Rome. Here he published a book called *The Spiritual Guide*, 1675, which taught an extreme form of Quiet-



Miguel de Molinos,
Spanish mystic

ism, for which he was condemned in 1687 by the Inquisition to imprisonment for life. He died Dec. 28, 1696.

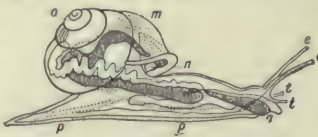
Mollendo. Seaport of Peru, in the prov. of Arequipa. It stands on the Pacific coast, 10 m. S.E. of Islay, and is connected by rly. with Arequipa and Puno, through which there is considerable traffic with Bolivia. It exports gold, silver, copper, etc., and imports merchandise for Bolivia. Pop. 4,000.

MOLLUSCA: SHELL-FISH, SNAILS, ETC.

W. J. Wintle, F.Z.S.

See the articles on *Gastropoda* and the other classes of molluscs; also those on the various molluscs, e.g. *Oyster*; *Slug*; *Snail*. See also *Animal*, with colour plate; *Biology*; *Life*

Mollusca (Lat. *molluscus*, softish) is the name given to the animal phylum or sub-kingdom, which includes the animals commonly known as "shell-fish," the snails and slugs, and the cuttles. The molluscs may be described as soft, cold-blooded animals, with unsegmented and limless body, pos-



Mollusca. Anatomy of garden snail: *a*, mouth; *cc*, eyes; *m*, branchiae; *n*, orifice opening into pulmonary cavity; *o*, position of ovaries; *p*, foot; *t*, tentacles; shaded portion, stomach and intestines; dotted lines, blood-vessels

sessing no internal bony skeleton and no cartilaginous tissues—except in the cephalopods—and in the majority of cases secreting a shell either external or internal.

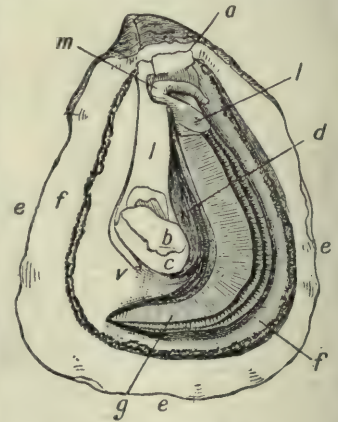
They differ greatly in size and form, but certain features are common to nearly all the families. Except in the bivalves, most of them possess a head provided with a mouth containing the characteristic radula or tooth ribbon. In nearly all the families a foot or locomotive organ is present. This may take the form of a sole on which the animal creeps, as in the snail; an axe-shaped pushing instrument, as in the bivalves; a digging or boring implement, as in the elephant tusk shells; or a series of prolongations or "arms" about the mouth, as in the cuttles and nautilus. In the case of sedentary molluscs, as the oyster, the foot may be rudimentary or absent; and in the case of some active bivalves, as the cockle, the foot enables the animal to jump about.

Another characteristic feature is the mantle or fold of skin which may either cover both sides of the body, as in the bivalves, or part of

Mollusc, THE. Comedy by Hubert Henry Davies. It was produced Oct. 15, 1907, at the Criterion Theatre, London, where it had a run of 324 continuous performances. The heroine is an invertebrate young wife who is stimulated into vitality by her idea that her husband is flirting with her companion. Charles Wyndham, Elaine Inescourt, Sam Sothern, and Mary Moore played the leading parts.

the back only, as in the univalves. The shell, which is the conspicuous feature in the majority of molluscs, is secreted by the mantle, along the edge of which are a series of glands for the purpose. These glands are of three kinds, corresponding to the three layers of the shell. The outermost secrete the periostracum or organic skin, which covers the shell in the living state and protects it from erosion. The next row of glands secretes the limy layer which constitutes the bulk of the shell, and is often beautifully coloured and marked; and the final row provides the nacreous or pearly lining of the shell. The entire surface of the mantle is capable of secreting colourless shelly material.

Molluscan shells take the most varied forms. They are double, like a closed book, in the bivalves; usually spiral in the gastropods, as the snail and the whelk; elongated and tubular in the elephant tusk shells; composed of a series of plates



Mollusca. Anatomy of common oyster: *a*, hinge line; *b* and *c*, adductor muscle; *d*, attachment of gills to mantle; *eee*, edge of valve where mantle is attached to shell; *ff*, fringed edge of mantle; *g*, gills; *i*, liver; *m*, mouth; *v*, vent

in the chitons or "coat-of-mail shells"; concealed by the mantle in the slugs; or quite internal, as the so-called "bone" of the cuttles. They may be smooth and highly polished on the exterior, or covered with ridges, knobs, and spines. Every known tint of colour occurs in their ornamentation. The aperture may be a simple opening, or so obstructed by folds or "teeth" that it seems marvellous that the animal can get out. The mother-of-pearl of commerce consists of the inner lining of certain shells; while pearls consist of the same material, usually secreted around an intrusive parasite or a grain of sand, to protect the tissues from irritation.

Molluscs are widely distributed. The majority are marine, but many inhabit fresh water, and others are terrestrial. They range from the tropics to the Arctic regions; and in the ocean they occur from the shallows by the shore to depths of 2,000 fathoms. Though moisture is essential to their existence, some species manage to live in hot deserts, where they support life on the barest scrub, and are only refreshed by rain at very rare intervals. It has been estimated that there are over 50,000 living species, of which the gastropods account for over 40,000 and the bivalves for about 9,000. But the widely differing views of systematists as to what constitutes a species make such estimates uncertain and provisional.

Circulatory System

Most of the molluscs have a well-developed circulatory system, centring in a heart which may have one or two ventricles and auricles. Arteries and veins convey the blood from and to the heart, but it is doubtful if any true capillary system exists, except perhaps in a very few species. Usually the blood is conveyed to lacunae or spaces between the internal organs. It is aerated in the case of marine species by gills which extract oxygen from the water, and these gills are usually within the mantle cavity. In the case of the nudibranchs they are exposed on the exterior of the body. In the pulmonates, which include the terrestrial species generally and most of the fresh-water snails, no gills are present, but the interior of the mantle acts the part of a lung, its inner surface being covered with finely branching vessels, which bring the blood into close contact with the air.

The alimentary canal commences with a mouth which, except in the bivalves, is provided with a radula or lingual ribbon. This consists of a strip of chitin, covered

with numerous rows of teeth, which moves backwards and forwards over a pad. By this means the food is rasped into fragments before being swallowed and conveyed to the crop, where it is acted upon by the secretions of the liver and other glands. In the cephalopoda there is also a horny beak, much like that of the parrot. In the gastropoda the alimentary canal with its attendant viscera undergoes torsion and is more or less twisted into a figure of eight, thus bringing the anus round to one side of the back and forwards; while in the cephalopoda it is shaped like a letter U, and the anus is near the mouth, but separated from it by the "arms."

Most molluscs appear to be provided with the usual five senses. They are all very sensitive to touch, notably along the edge of the mantle, which is often specialised into lobes that appear to have a tactile purpose. The tentacles on the head also serve the same purpose, and the foot is extremely sensitive. Most of the species, except the bivalves, have eyes on their head, either upon or closely associated with the tentacles or horns. In the cephalopods the eyes are very completely developed; while in many bivalves they are represented by sensitive ocelli arranged along the edges of the mantle. But it is very doubtful if any mollusc, except the cephalopods, can see much. The sense of smell is well developed, though very little is yet known about their olfactory organs.

Characteristics of Species

Reproduction in the molluscs is sexual; in some species the sexes are in separate individuals, while in others hermaphroditism occurs. But the action of two individuals is always needed, self-fertilisation appearing to be a very rare and abnormal occurrence. The young are always produced from eggs, which are usually hatched exterior to the body of the parent; but in the bivalves and some gastropods they are retained within the body or the shell of the parent till after hatching. The common swan mussel of British ponds is estimated to produce over a million eggs, and the same is true of the edible oyster; while the common dog whelk, which swarms on the rocks around Gt. Britain, has been observed to produce over 120,000 eggs. The land and fresh-water species are not so prolific, the common snail (*Helix aspersa*) laying from 40 to 100 eggs each summer. Certain S. American snails lay eggs as large as pigeons' eggs.

Molluscs are herbivorous, carnivorous, and omnivorous. The majority of the land species feed upon

vegetables, but many land and fresh-water species are more or less carnivorous. Among the marine species, nearly all those whose shells are round-mouthed and have no notch or channel at the inner lower corner are vegetarian and feed upon growths on the rocks, as the limpets. Where the notch exists, e.g. with the whelks, it may usually be safely assumed that the animal is carnivorous. These feed upon carrion and other shellfish.

The length of life in the Mollusca varies greatly. Mussels are full-grown in a year and oysters in five years, though they have been known to live ten. The swan mussel is believed to live from 20 to 30 years, and the common periwinkle has lived in an aquarium for 20 years.

Principles of Classification

The classification of the Mollusca is still a matter of difference of opinion among malacologists. The following arrangement covers the main points and has at least the merit of simplicity. It may be amplified by reference to the works mentioned below.

Class I. GASTROPODA (stomach-footed). These have a flat foot adapted for crawling.

Div. 1. *Amphineura*. In these the internal organs are bi-lateral and symmetrical; and in most the shell consists of eight plates arranged along the back. Example, the chitons.

Div. 2. *Streptoneura*. In these the visceral organs have been twisted into a figure of eight loop; the gill is in front of the heart; and the sexes are separate. Examples, limpets, whelks, and periwinkles.

Div. 3. *Euthyneura*. In these the visceral loop has become untwisted; the gill—if any—is behind the heart; and the animals are hermaphrodite. Examples, sea slugs, and land and fresh-water snails.

Class II. SCAPHOPODA (digging-footed). These have a nearly straight, tubular shell; and the foot is long and cylindrical. Examples, the elephant tusk shells.

Class III. PELECYPODA (axe-footed). This class includes all the bivalves. Examples, the oyster and mussel.

Class IV. CEPHALOPODA (head-footed). In these the front part of the foot is developed into a series of sucker-bearing arms about the head. Examples, the cuttles, octopus, and nautilus.

Economically, the Mollusca are of great importance to man. Nearly all of them are edible, though it must be admitted that most of them are not attractive. They are also much used as bait in fishing. The shells are used for ornamental purposes

among both civilized and uncivilized communities. Mother-of-pearl, which is the inner layer of various marine shells, is put to many useful purposes; while the pearl is one of the most valued of gems. In China thin shells are used as window-panes; shells like the cowry have long been used as money among native tribes; purple dye was formerly extracted from molluscs; sepia and Indian ink are derived from the cuttles; and primitive communities still make weapons and household implements from shells.

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Molluscum Contagiosum. Disease of the skin, in which small, white tumours appear on the surface in various parts of the body, the face and eyelids being often involved. The disease is contagious, and the growths, if left alone, persist for a long time, but ultimately tend to disappear spontaneously. Treatment consists in incising the tumour and squeezing out the contents.

Mollwitz. Village of Silesia. It is 7 m. from Brieg, and is famous for the battle fought here, April 10, 1741, between the Austrians and the Prussians. Frederick the Great had seized Silesia, so early in 1741 the Austrians equipped an army to recover it. Under Neipperg this marched from Neisse towards Brieg, thus cutting off the Prussians from their base. The scattered forces of the latter were concentrated with some difficulty, and the two armies came into touch near Mollwitz. After a few days spent in getting into position the battle began on April 10. The Austrian horsemen opened the fight with an attack on their foes, which resulted in the rout of the Prussian cavalry, Frederick himself being one of those who hurried from the field. However, the trained Prussian infantry presented a far tougher front; the Austrian cavalry rode repeatedly at them, but in vain, while the Austrian infantry suffered greatly from the precision and rapidity of their fire. These operations were conducted by Schwerin, who took command after the king fled.

Molly Maguires. Name of an Irish secret society formed in 1843 in co. Monaghan for the purpose of intimidating landlords. The name

was afterwards applied to an American-Irish secret society which flourished in the mining districts of Pennsylvania, U.S.A., 1854-77. In 1875 the Molly Maguires engineered a general strike in that region, and many assassinations, acts of intimidation, and other crimes were traced to them. So serious did the situation become that a strong effort was put forth to crush the society. A. Pinkerton (*q.v.*), detective, succeeded in becoming a member of the organization, and on his information the leaders were arrested, convicted, and sentenced to death, and the society soon disappeared as a dangerous force. *See* Ribbonmen; consult also The Molly Maguires and the Detectives, Allan Pinkerton, 1878.

Moloch. Canaanite fire-god, the Semitic word meaning king. This Septuagint spelling represents the Hebrew Molech, whose worship, notably under Ahaz and Manasseh, involved child-sacrifice and pyre-burning (2 Kings 23). These were sacrifices to Jahveh, and the rites survived among the Jews until a late period, as is proved by references to them by Ezekiel and Jeremiah. The burning of living children in a brazen, calf-headed Moloch-image is a medieval fable. The national god of ancient Ammon, Milcom, is distinguishable.

Moloch horridus. Australian lizard of the family Agamidae, also called spiny lizard, spiny or thorny devil. The upper parts are liberally armed with horny spines, the head and depressed body are about $4\frac{1}{2}$ ins. in length, and the tail about $3\frac{1}{2}$ ins. Its form is much like that of a toad with a tail added; and when alarmed it increases the resemblance by puffing out its body, and making its spines more effective for protective purposes. Its broad blotches of light and dark colour harmonise with the soil and can be varied like those of the chameleon, but to a much less extent. In spite of its appearance it is perfectly harmless, its spines being purely defensive. Its food consists of insects, chiefly ants. *See* Lizard, colour plate.

Molokai. One of the Hawaiian Islands, Pacific Ocean. Its mountains, scored by ravines and forest clad, rise to 3,000 ft. The leper settlement, the scene of the labours of Father Damien (*q.v.*), is in the middle of the N. coast. The people live mainly on a narrow fertile strip along the S. coast. Area, 261 sq. m. Pop. 2,500.

Molopo. Former tributary of the Orange river, S. Africa. It emerges from a swallow hole in the

limestone of Marico dist. near Mafeking, and flows W., forming the N. boundary of Bechuanaland. As it crosses the Kalahari desert it becomes a dry watercourse, bordered by trees, which ultimately joins the Orange river. When water flows occasionally along this channel it terminates, by a short new course, in the Abiquas Pan, and does not reach the Orange.

Molsheim. Town of Alsace, France. It stands at the foot of the Vosges, on the river Breusch, and is a rly. junction. The buildings include a modern town hall and several churches, including a fine Roman Catholic one. Until 1702 there was a noted Jesuit college here. There are some manufactures, while the vine is grown in the neighbourhood. As part of Alsace, Molsheim existed in the 9th century or earlier. In the 17th century it became French and it belonged to France until 1871, and was restored to that country in 1919.

Molteno. SIR JOHN CHARLES (1814-86). South African statesman. Born in London, June 5, 1814, he went to S. Africa in 1831, and engaged in business and farming at the Cape and at Nelspoort. He took part in the Kaffir War of 1846, and sat for Beaufort in the first Cape parliament, 1854. An active advocate of responsible government for the Cape Colony, he was appointed the first premier when it was conceded in 1872. He visited England in connexion with Lord Carnarvon's conference on S. African affairs, 1876, and stood for the unification of S. Africa, but strong differences of opinion with Sir Bartle Frere (*q.v.*) during the next two years led to Molteno's dismissal in Feb., 1878, and for a time he retired from public life. In 1880 he was returned for Victoria West, and resumed the office of colonial secretary, but in 1882 he finally retired, being rewarded with the K.C.M.G. He died on Sept. 1, 1886. *See* Life, P. A. Molteno, 1900.

Moltke. German battle cruiser. Completed at Hamburg in 1911, she was the second battle cruiser added to the German fleet, the first being the Von der Tann. The Moltke was 610 ft. long, 96 ft. in beam, displaced 23,000 tons, and had engines of 70,000 h.p., giving a speed of about 27 knots. She carried ten 11-in., twelve 5.9-in., and twelve smaller guns, and had an 11-in. belt amidships. She was amongst the ships of the German navy surrendered to the Grand Fleet in Nov., 1918, and was sunk by her German crew at Scapa, June 21, 1919. The Goeben (*q.v.*) was a sister ship.

MOLTKE: HIS WORK FOR PRUSSIA

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This Encyclopedia contains biographies of all the world's great soldiers, e.g. Caesar; Hannibal; Lee; Marlborough; Napoleon; also Foch and others prominent during the Great War. See also Franco-Prussian War; Seven Weeks' War; Strategy; Tactics; War

Helmuth Karl Bernhard, Count von Moltke, was born Oct. 26, 1800, at Parchim in Mecklenburg, of a noble but impoverished German family. He passed his childhood at Lübeck and in Holstein. At 11 he was sent as a cadet to Copenhagen, was at 17 a page at the Danish court, and at 19 a lieutenant in the Danish army. In 1822 he resigned his commission to enter the Prussian service. After three years at the Kriegsakademie (staff college), he became a garrison instructor, was then employed for three years on the topographical survey, and in 1832 was attached to the general staff at Berlin.

With only his lieutenant's pay, while performing all his military and social duties, Moltke found time to study history. In 1830, on the occasion of the separation of Belgium from Holland, he published a monograph on the historical relations between those two countries. In 1831, during the Polish troubles, he wrote an essay on the internal conditions of Poland. In 1835 he became captain, and obtained six months' leave to travel. He went to Constantinople, and there accepted an offer of employment in the sultan's service. As a surveyor, he mapped Constantinople, the Bosphorus, and the Dardanelles, as well as the chief strategical points in Bulgaria and Rumelia. Sent as staff officer to the pasha who was raising in Armenia an army to resist the invasion of Ibrahim Pasha from Egypt, he explored Armenia, especially the Upper Euphrates. When the army moved into the plain of Syria, his pasha, against his protest, accepted battle at Nisib, where Ibrahim Pasha defeated and dispersed the Turkish army.

Moltke returned to Germany in 1840, and in 1841 he published *Letters on Conditions and Events*

in Turkey, a work which gives him a high place among German writers. In 1842 he was promoted major and in 1845 married an Englishwoman, Mary Burt, published a history of the Russo-Turkish War of 1828-29, a military classic, and was appointed personal adjutant to Prince Henry at Rome. He spent his leisure in surveying the city and its environs, of which he afterwards published a map, as well as a monograph on its topography and early history. In 1846 he became chief of the staff of the army corps which had its headquarters at Coblenz, and in 1848



H. v. Moltke

was transferred in a similar capacity to Magdeburg. At this time he thought of retirement and a country life. But the revolution of 1848 kept him busy. In 1855 he was chosen as adjutant to Prince Frederick William (afterwards the emperor Frederick), whom he accompanied to Paris and St. Petersburg, and four times to England.

In 1858 Moltke was selected by the Prince Regent, afterwards King William I, as chief of the general staff of the Prussian army. He occupied himself with thinking out his plans for such wars as seemed likely, with military history as the basis of generalship, with problems of mobilisation, and with the instruction of the officers of the general staff. He wrote a history of the campaign of 1859 in Italy, and in 1862 a history of the war of 1848-49 between Prussia and Denmark, a renewal of which took place in 1864.

Plans for the War of 1864

For this renewal Moltke's plan aimed at the capture of the Danish army in the first battle. The Prussian and Austrian forces were under the command of Wrangel, who, failing to grasp Moltke's idea, let the Danish army escape to Düppel. Moltke then planned the storming of Düppel, by which the Danish army was driven onto the island of Alsens, and afterwards the attack upon Alsens across an arm of the sea, the success of which decided the campaign.

In 1865 Moltke sketched the tactics suited to the breech-loading rifle, and acting on these ideas, and with William's confidence and support, was able to conduct with success the wars of 1866 against Austria, and of 1870-71 against France. In each case he formed three armies, the commanders of which were Prince Frederick Charles, the Crown Prince, and, for the smallest army, one of the generals. He himself remained at the headquarters of the king, who was commander-in-chief. He was thus responsible for the instructions given to the army commanders, and for the conduct of those battles at which the king was present, in 1866 Königgrätz (Sadowa) and in 1870 Gravelotte and Sedan.

Strategy in 1866

It was Moltke who in 1866 determined to employ seven-eighths of the army against Austria and Saxony, and only one-eighth against all the other German states. By his directions from Berlin the Hanoverian army was brought to surrender at the end of a fortnight, after which South Germany was easily overcome. The attack on Austria was made by the concentric advance from separate starting points of the three armies, two of which united early in their advance, so arranged as to bring them into touch with one another on the eve of the decisive battle of Königgrätz. This plan has been criticised, usually in ignorance of Moltke's explanation of it,



Moltke. The German battle cruiser which took part in the attack on Scarborough, Dec. 16, 1914

published in 1867. Later disclosures show that it was a modification of Moltke's original design, due to influences which he could not control. At any rate it was justified by complete success. Moltke held that the triumph of strategy was to bring two armies from different directions to converge against the enemy on the same battlefield. This had been the nature of the operation at Waterloo, which might have been the model for Königgrätz.

In 1870 Moltke directed his three armies towards the short French frontier between Luxembourg and the Rhine. His plan was for a convergent attack on Bazaine's front and flanks. The Crown Prince, by crushing Macmahon at Worth, prepared the way for his intended move against Bazaine's right flank and rear, but the rashness of Steinmetz brought on a premature attack on the front and caused Bazaine to escape by falling back upon Metz. Moltke then resolved to cross the Moselle S. of Metz and by a right wheel to attack him from the S. during his expected retreat towards Châlons. The energy of Alvensleben at Mars-la-Tour prevented the retreat and made it possible for Moltke, with 200,000 men, to attack the strong position at Gravelotte which Bazaine defended with 150,000.

The day after this battle Moltke ordered the investment of Metz and of Bazaine's army by one of the German armies, and the advance of the other two on Paris. When he learned of Macmahon's march from Châlons to relieve Bazaine, Moltke wheeled his two armies to the N. and struck Macmahon in flank, crushing his right wing corps at Beaumont. Pressing on, he drove Macmahon back to Sedan, and there not only attacked but surrounded his army, so that of its 124,000 men 100,000 became prisoners. The capitulation of Sedan and the subsequent surrender of Bazaine at Metz made an end of the French regular army. Moving on from Sedan to Paris, he invested that city, and, despite Gambetta's efforts, maintained the investment until its surrender ended the war.

In 1870 Moltke was created count and received a vote of money. In 1871 he was elected to the Reichstag, where his voice in debates on the army was decisive. He supervised the preparation by the general staff of histories of the wars of 1866 and 1870-71, and continued, until his retirement in 1888, to discharge the duties of his office, in which during his later years he had the assistance of Count Walder-

see. He died at his official residence in Berlin, April 24, 1891.

Moltke's greatness rested on a character formed by a life of study and self-denial. He was not merely the inventor of the modern method of command by devolution. His energy, boldness, and determination make him the peer of the great commanders of history, and his genius was the more remarkable in that he was able to reveal it, though neither a monarch commanding in his own name nor even an independent commander-in-chief, but merely the adviser of his king. His system of trusting for the details of execution to the commanders of armies several times came near to a breakdown through the weakness of these commanders, notably of Frederick Charles in 1866 and of Steinmetz in 1870. In spite of these disappointments, he always held to his purpose and reached his goal. Perhaps better than any other great general, he realized the character described by Wordsworth as the happy warrior.

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Moltke, HELMUTH JOHANNES LUDWIG VON (1848-1916). German soldier. Son of Adolf von Moltke, administrator of Rantzau, and nephew of the great von Moltke, he was born at Gersdorff, Mecklenburg-Schwerin, May 23, 1848. He entered the German army as a lieutenant of infantry, and served through the Franco-Prussian War. He was for a time a lecturer in the Military Academy, Berlin. In 1891 he was appointed A.D.C. to William II, and in 1906 became general of infantry and chief of the general staff, in succession to Count von Schlieffen. As chief of the general staff he was the real generalissimo of the German army when the Great War broke out, and held that position till Oct., 1914, when, owing to the failure to capture Paris, he was superseded by Falkenhayn. He died on June 18, 1916.



Helmuth von Moltke, German soldier

Molton, SOUTH. Mun. borough and market town of Devonshire. It stands on the Mole, 12 m. from Barnstaple and 197 m. from London, with a station on the G.W. Rly. The chief buildings are the fine Perpendicular church of S. Mary Magdalene, with an old pulpit and font, the guildhall, and the market house. The town is an agricultural centre, and its industries include flour-milling. It had fairs in the Middle Ages, and was given a corporation in 1590. It was then and later a centre of the woollen manufacture, while at one time lace was made here. At one period it sent two members to Parliament. Market days, Thurs. and Sat. Pop. 2,950. North Molton is a parish and village, 3 m. to the N.E. It was once a market town, and its church, All Saints, has some objects of interest.

Moluccas OR **SPICE ISLANDS.** East Indian islands forming part of the Dutch East Indies. They are Gilolo or Halmahera, Ternate, Tidore, Bachian, Buru, Ceram, Amboyna, and the Banda Islands. Amboyna and Ternate give their names to the two administrative divisions into which the group is divided, and these divisions include also Dutch New Guinea. The islands cover some 20,000 sq. m. in area, 40,000 sq. m. if adjacent islands are included; est. pop. 450,000. In general they are volcanic; and there are active cones on Ternate, Gilolo, and Banda.

Ternate consists of a peak 6,000 ft. above sea level, and has the residence of the sultan. Ceram exports sago, Amboyna cloves, and the Banda Islands nutmegs.

The Spice Islands were known by repute long before European ships reached the East Indies, and their native and unique products were articles of trade greatly desired during the Middle Ages, when seasoning was required to make winter meat palatable. Two Portuguese, Serrano and D'Abren, located them in 1512, and they were Portuguese from 1521 until the natives expelled the traders in 1583; in 1613 the Dutch acquired them, and have held them since that date. The early Dutch policy was marked by great secrecy; to maintain the monopoly in the supply of cloves, the tree was exterminated in all the islands except Amboyna. The monopoly has been abandoned, and both cloves and nutmegs are grown elsewhere in the East Indies and Malaya. See Amboyna; Gilolo.

Moluccella laevis. Annual herb of the natural order Labiateae. It is a native of the Mediterranean region. It has roundish long-stalked leaves, and the flowers are

densely clustered in many whorls around the erect stem, and are singular in that the white tubular corolla (of the type common in labiates like the dead-nettles) is very much smaller than the calyx, which encloses it like a hood.

Molybdenum (Gr. *molybdo*, lead). One of the metallic elements, chemical symbol, Mo; atomic weight, 96; specific gravity, 8.6; melting-point about 1,900° C. (3,452° F.). Silver white in colour, with a strong metallic lustre, it is prepared by heating the chloride or the trioxide to redness in a current of hydrogen. The principal ores of the metal are molybdenite, a sulphide containing 59 p.c. Mo and 41 p.c. sulphur, found in granite, gneiss, mica slate, and allied rocks, and in granular limestone; and lead molybdate, in which it is present in the form of molybdic acid, combined with lead oxide. It appears also in one or two other rare minerals.

While a rare metal, it is widely distributed, occurring in Canada, the U.S.A., Bolivia, Peru, Chile, Queensland, New South Wales, Tasmania, New Zealand, Japan, Rhodesia, East Africa, Sweden, Germany, and Norway, and in Cornwall and Cumberland. Molybdenum sulphide appears to have been first recognized in 1778 by C. Scheele; and was first isolated by the Danish chemist P. J. Hjelm in 1782. It is in considerable demand for use in the preparation of alloy tool steel, either in the form of nearly pure metal or as ferromolybdenum, this latter preparation containing from 50 p.c. to 85 p.c. of Mo and from 50 p.c. to 10 p.c. of iron, with traces of silicon, phosphorus, and sulphur. The alloy is made in the electric furnace. See Metallurgy; Steel.

Mombasa. Chief port of Kenya Colony, E. Africa. Situated on a coral island connected with the mainland by rly., it has two harbours, that on the N.E. being mainly used by small steamers and native craft. The Kilindini harbour, used by large vessels, is one of the finest natural harbours on the E. coast of Africa. Here is the coastal terminus of the Uganda Rly. Mombasa was at one time the capital of the Portuguese empire in E. Africa. The massive fortress erected 1593-95 sustained a prolonged siege in 1696-97 and is the most prominent building in the city. Mombasa was held by the sultan of Zanzibar from 1834-88. There are an Anglican cathedral and a R.C. church. Pop. 30,000.

Moment. Term used in mathematics in various ways. The moment of a force about a point is the

product of that force by the perpendicular distance of the point from the line of action of the force. The sum of the moments of two forces about a point is the same as the moment of their resultant about the point. The moment of inertia of a rigid body about any axis is the summation of the products of the masses of the particles of the body and the squares of their distances from that axis. The bending moment at any section of a beam is the algebraic sum of the moments of all applied forces, including the reactions, on either side of the section, and is usually written B.M. or M. The word is also used in phrases denoting a short period of time.

Momentum. In dynamics, the product of the mass of a moving body and its linear velocity. The term was used by Galileo and Newton, and by the latter's third law of motion the momentum of a body or a system of bodies cannot be changed by the actions of forces between their various parts. This is the principle of the conservation of momentum. The angular momentum of a body is a term used in connexion with rotating bodies, and is the product of the moment of inertia of the body about the axis of rotation and its angular velocity. See Dynamics; Force.

Mommsen, THEODOR (1817-1903). German historian and scholar. He was born at Garding in Slesvig, Nov. 30, 1817, the son of a pastor, and educated at Kiel University. Specialising in the study of antiquities, he spent three years in Italy studying inscriptions. The results of his work brought him wide recognition, and in 1848 he was appointed professor of



Theodor Mommsen,
German historian

civil law at Leipzig. This post he lost in 1850 in consequence of expressions of sympathy with the revolutionary party.

Taking refuge in Switzerland, Mommsen was appointed professor of Roman law at Zürich. On his return to Germany in 1854, after a period at Breslau he became professor of ancient history at Berlin in 1858. In the meantime he had been at work on his *Roman History*, which appeared between 1854-56. With his professorship was bound up the task of editing the *Corpus Inscriptionum*, which he had been asked to undertake by the Berlin Academy. He also engaged in an immense amount of other labours, notably a work on Roman coinage, and two others dealing with Roman law. In 1884 appeared his *Roman Provinces*, the most valuable of all his contributions towards the elucidation of ancient history. From 1873-82 he was a member of the Prussian Parliament; in the latter year he was charged with slander of Bismarck, but was acquitted. He died at Charlottenburg, Nov. 1, 1903.

As an historian Mommsen takes high rank. One of the most profound scholars that ever lived, he was indefatigable in the collection and coordination of his material, while he had in an eminent degree the faculty, often denied to the mere scholar, of taking a broad view of the result of his labours. In his judgements, however, he has the characteristic defect of identifying might with right, and his *History of Rome* is in effect a glorification of Caesarism and a virtual vindication of the notion that power belongs to him who has the ability to take and keep it. The literary chapters of the history and his character drawing, although sometimes unfair, e.g. Cicero, are excellent. There is a very good English translation by W. P. Dickson of the *Roman History* and the *Roman Provinces*. See History.

Momostenango. Town of Guatemala, in the dept. of Totonicapan. It stands on the N. slopes of the W. section of the Sierra de las Minas, 66 m. N.W. of Guatemala. The district to the N. is very fertile, the chief crops being rice, cereals, and beans. Woollen cloth is manufactured. Pop. 18,000.

Mompoz or **Mompoz.** Town of Colombia, S. America, in the dept. of Bolivar. It stands on the river



Mombasa, Kenya Colony. Landing place for small steamers and native craft



Monaco, South Europe. General view from the town of Monaco, looking east; showing the town of La Condamine, part of Monte Carlo Harbour, and, left, the palace of the Prince of Monaco

Magdalena, 110 m. S.S.E. of Cartagena. Once an important river port, silting has made the river unnavigable. Tools and instruments are manufactured. Pop. 14,700.

Momus. In Greek mythology, the god of jest and mockery. His sarcasm and criticisms became so obnoxious to the other gods that he was expelled from heaven. He was the son of Night.

Mona. Name by which the island of Anglesey (*q.v.*) was known to the Romans. The name was also applied, perhaps in error, to the Isle of Man.

Monachite. German safety explosive made at Munich. Several different varieties are made, the more important compositions being given below. These explosives were the first industrial compositions to employ trinitroxylenes as the sensitising ingredient. This explosive is not used in the pure state, but as a crude mixture of di- and tri-nitroxylenes prepared by nitrating solvent naphtha. Such a mixture is generally liquid or only semi-solid, whereas pure trinitroxylenes is a solid with a high melting point.

| Ingredient | Monachite I | Monachite II | Monachite III |
|----------------------|-------------|--------------|---------------|
| Trinitroxylene... | 13 | 14 | 12 |
| Ammonium nitrate... | 81 | 64 | 64 |
| Alkaline nitrate... | 5 | 3 | 3 |
| Flour... | 1 | — | — |
| Wood charcoal... | — | 1 | 1 |
| Alkaline chloride... | — | 17 | 19 |

See Explosives; Safety Explosives.

Monaco. Principality of S. Europe. Except for the short coast-line on the Mediterranean Sea, this small state of 8 sq. m. is entirely bounded by the French dept. of Alpes Maritimes. Coal and wine are imported in exchange for olive oil, oranges, citrons, and perfumes. The revenue is mainly derived from the gaming tables, £80,000 being an-

nually paid by the concessionaires. Pop. 23,000 in the towns of Monaco, La Condamine, and Monte Carlo.

The town of Monaco, pop. 2,000, is a sea-bathing resort, and contains the new Roman-Byzantine cathedral and the palace of the prince. It is also the seat of the international hydrographic bureau, established in 1921.

The family of Grimaldi secured Monaco in 968, and when, in 1715, the male line failed, it passed to a daughter and her husband. It was French 1792-1815, while for a few months in 1859-60 it was in the hands of the Sardinians. Since 1861 it has been under the protection of France. The prince gave it a constitution in 1911. See Monte Carlo.

Monad (Gr. *monas*, a unit). According to Leibniz (*q.v.*), the founder of the system known as monadology or monadism, every compound can be resolved into elements which he calls monads. These are simple, incorporeal, unextended, intelligent, substantial unities. They are not physical points, like the atoms of Epicurus, but metaphysical points, real forces, not purely passive, like the corporeal elements of Descartes. All that exists results from the association of these monads with a principal monad, whereby is produced a gradation of species, ascending from raw matter to the vegetable, the animal, the intelligent conscious being, and finally to God, the ultimate reason of things. In ancient philosophy monad signified unity

as opposed to duality, and also the number one, to which the Pythagoreans appear to have attributed creative force.

Monagas. State of N.E. Venezuela. It is S. of Sucre, N. of the Orinoco, and W. of the Gulf of Paria and Delta Amacuro; the E. boundary is the Manamo, the most westerly distributary of the Orinoco delta. The W. section of the state is hilly, the E. low-lying. It is well watered, fertile, and contains several lakes. The capital is Maturin Area, 11,155 sq. m. Pop. 90,000.

Monaghan. County of Ireland. In the province of Ulster, its area is 499 sq. m. The surface is undulating, with hills in the south and east, and in parts boggy. The chief rivers are the Blackwater, flowing along the N.E. boundary, and the Finn, and there are many small lakes. Oats, flax, and potatoes are grown; cattle, sheep, pigs, and poultry are reared. Coal, limestone, and gypsum are mined on a small scale. The G.N. of Ireland Rly. and the Ulster canal serve the county.



Monaco arms



Monaghan, Ireland. Map of the pastoral county of Ulster

Monaghan is the county town; other places are Clones, Carrickmacross, Castleblayney, and Ballybay. The county was made a shire in the 16th century. There are various antiquities, the most notable being at Clones. Pop. 71,500.

Monaghan. Urban dist. and market town of co. Monaghan, Ireland; also the county town. It is on the G.N. of I. Rly., and the Ulster Canal, being 52 m. from Dublin. The chief buildings are the modern Roman Catholic cathedral, the court house, and others used for public purposes. There are a convent, a college for priests, and other educational centres. The town has a trade in agricultural produce. Monaghan grew up round a monastery, and was made a corporate town in the 18th century. In the vicinity is Rossmore Park. Market day, Mon. Pop. 4,300.

Mona Lisa. Name given to a half-length portrait by Leonardo da Vinci (*q.v.*) in the Louvre, Paris. The subject was a Florentine lady, Lisa di Anton Maria di Noldo Gherardini, who married Francesco di Bartolommeo del Giocondo in 1495. From her married name the picture is often known as La Gioconda or La Joconde. It is painted in tempera on a panel measuring 2 ft. 6½ ins. by 1 ft. 9 ins., and was probably executed between 1503-6. The artist himself held the portrait to be unfinished. It is believed to have been purchased by Francis I of France for 4,000 gold florins. In Aug., 1911, it was stolen from the Louvre, but was discovered in Florence and restored to its place in Dec., 1913.

Mona Monkey. Species of guenon monkey (*Cercopithecus*) found in W. Africa. Its colour is blackish brown on the back and white on the under parts, and it has a conspicuous white spot on each hip close to the tail. The face is purple, and the bushy side whiskers are yellow. See Guenon.

Monarch (Gr. *monos*, alone; *archein*, to rule). Name for a ruler whose authority is undivided. It originated with the Greeks, who classified states according to their method of government. The word monarchy was used throughout the Middle Ages, and later for the great states in which a single ruler had supreme power, *e.g.* the Hapsburg monarchy and the French monarchy, and continually appears in treatises on government, *e.g.* Dante's *De Monarchia*. Today monarch is merely a synonym for an emperor or king who rules by hereditary right as opposed to a president or elected head. Monarchy is absolute when there



Monaghan, Ireland. Interior of the Roman Catholic cathedral, looking west from the chancel

is no legal check on the power of the ruler, limited when his power is shared by other persons, such as nobles or an elected body, whether they derive their power from custom or from a constitution. See Divine Right; Government; King; Sovereignty; State.

Monarchianism. Name given to a heresy propounded in the 2nd and 3rd centuries by certain Christians, who, under cover of upholding the monarchia, or original oneness and sole government of God, opposed the orthodox doctrine of the Trinity, on the ground that it involved tritheism. This heresy, which was denounced by Justin Martyr (*c.* 100-165), appears to have been introduced to Christianity by Alexandrian Jews and Gnostics. The heresy was usually presented in one of three forms. The Adoptionist view was that Christ was not essentially and originally divine, but became the Son of God by adoption of the Father; the Dynamistic view was that Christ was a mere man, on whom God the Father conferred

divine powers; and the Modalistic view held Christ to be the Father Himself incarnate. See Adoptionism; Sabellianism; Trinity.

Monarkite. Safety explosive, containing a high proportion of sodium chloride to reduce the flame temperature. Its composition is as follows: nitroglycerine (gelatinised with 2.5 p.c.

nitrocellulose), 12.3 p.c.; ammonium nitrate, 49.7 p.c.; sodium chloride, 24.5 p.c.; sodium nitrate, 7.5 p.c.; starch, 4 p.c.; mineral jelly, 2 p.c. See Explosives; Safety Explosives.

Monash, Sir John (b. 1865). Australian soldier. Born at Melbourne, June 27, 1865, of Jewish parentage, he graduated at Melbourne University, and in 1884 began to practise as a civil engineer. He was a pioneer in introducing reinforced concrete into Australia, and became president of the Victorian engineering institute. He entered the Australian forces in 1887, and rose to the rank of colonel.



Sir John Monash. Australian soldier
Bassano, Ltd.

When the Great War began, Monash was first of all chief censor. In command of the 4th brigade he went to Gallipoli, and remained there until the evacuation, leading his men in some of the most desperate fighting, and then, after a rest in Egypt, went to France, where he commanded the 3rd Australian division, which he led when the Germans made their last attack in March, 1918. On June 1 following, he took command of the Australian Corps, and retained it until the armistice, when he became director-general of demobilisation for Australia. Knighted in 1918, he returned to civilian life, 1920, and was appointed manager of the Morwell Brown coalfield scheme in Victoria. See The Australian Victories in France in 1918, Sir J. Monash, 1920.

Monasterboice. Village of co. Louth, Ireland. It is 5 m. N.W. of Drogheda, and is famous for its remains. These include two churches, a round tower 110 ft. high, and three fine crosses.



Mona Monkey. Specimen of the West African species of guenon

Monastery (Gr. *monastērion*). House for monks. The term seems at first to have been applied to all religious houses of retirement, whether for men or women; but in course of time, while monks and nuns were housed in abbeys and priories, the former under abbots and priors, and the latter under abbesses and prioresses, it became the custom to call the houses for nuns nunneries or convents, and those for monks monasteries. See Abbey; Convent; Karakoram; Priory.

Monastery, THE. Eleventh of the Waverley novels, published in March, 1820, and the only one to which Scott added a sequel (*The Abbot*). A romance of the monastery of St. Mary's of Kennaquhair (Melrose Abbey), it deals with the family history of the Avenels (the lawless Border baron, Julian; his gentle niece, Lady Alice, and her daughter, Mary) and the Glendinnings (the widowed Elspeth, who shelters Lady Alice and her daughter, and her sons, Edward and Halbert, rivals for the hand of Mary). Euphuism is burlesqued in the character of the fugitive Elizabethan courtier, Sir Piercie Shafton, and the introduction of the supernatural White Lady, guardian spirit of the Avenels, is regarded as a weakness.

Monasticism (Gr. *monastikos*, living alone). System under which persons live who have abandoned the world for a life of religious seclusion. It is more ancient than Christianity, and perhaps is prehistoric. The problem of conformity to the world had become acute, even before the formation of a state Church under Constantine, in 325. Thenceforward a steadily increasing stream of Christians went out to hermit life in the Egyptian deserts. They fled not only from the world, but from a Church which had admitted the world to its bosom. Many of these hermits gradually formed communities under systematic rules, of which S. Basil's is the best known.

Meanwhile the monastic ideal spread to Western Europe, where it found a legislative genius in S. Benedict (d. 542), whose rule either superseded or modified all others. Both Church and State, from different points of view, agreed in ratifying the indelibility of monastic vows. From the "Three Substantials" of poverty, chastity, and obedience not even emperor or pope could grant dispensations. These, under the Benedictine rule, were reinforced by other prescriptions—frequent prayer, manual labour, abstinence from flesh-food, and strict claustration within monastic precincts. The rules of the



Monastery. Plan of the ancient priory of S. Bartholomew, London. A. Cloisters. B. Nave. C. Chapel. D. Refectory. E. Great Tower. F. Choir. G. Prior's house, above which was infirmary and dormitory. H. Chapter House. J. South transept. K. North transept. L. Present entrance to church.

regular canons were rather less strict than those of the Benedictines in the matter of food and claustration.

Throughout the Dark Ages the monks did indirectly work of great value as missionaries, sacrificing their ideal of seclusion to the necessities of their fellow-men. School teaching, except to the boys who were being trained for monks, was, however, no part of the monastic ideal at ordinary times and places; the universities owed scarcely anything to the monasteries in their inception; and even the nunnery schools of the later Middle Ages grew up in spite of ecclesiastical prohibitions, and mainly under the pressure of financial causes. The direct services of the monks to medicine and art have been exaggerated. While monasticism was perhaps the greatest social force of the Middle Ages, it cannot be really understood except in reference to its environment; and medieval civilization was still very rudimentary in important particulars.

The 11th and 12th centuries saw a considerable revival of learning and civilization in Europe; and the monastic system was found to need a good deal of reform. Between 1020 and 1120 eight new and stricter orders were founded; of these the most important were the Carthusian, Praemonstratensian, and Cistercian. The last aimed simply at a restoration of the exact Benedictine rule, which had everywhere been relaxed. It owed most of its success to S. Bernard (d. 1152), but, by the end of the century, even this reform had spent most of its force. Then came the great revivals associated with the names of S. Francis (d. 1226)

and S. Dominic (d. 1221). The Franciscans and Dominicans, with the Austin friars and Carmelites, were called Mendicants, as opposed to the older Possessionates or owners of property.

In all orders the *individual* was forbidden to possess property; but whereas, in the older orders, the *corporate* endowments were considerable, the four orders of friars repudiated in theory even corporate possessions. This, however, soon broke down in practice; but, to the very end, the friar differed from the monk in depending to a considerable extent upon alms. The Franciscan revival was certainly the greatest religious movement between the Apostles and the Reformation, and contributed greatly to the advancement of learning. From about 1230 onwards, the friars became for a century the most active and successful of university teachers.

This was the last of the great reforms of the Middle Ages, though much was done at different places to avert decay. The more intimate monastic records, which are only now being systematically published and studied, show a gradual abandonment, not only in practice, but even in theory, of many of S. Benedict's most important prescriptions. Manual labour was practically dead three centuries before the dissolution in England; the prohibition of flesh-food was whittled away, even with papal sanction; and the rule of claustration was so habitually broken that its re-enactment by Henry VIII has sometimes been spoken of as a piece of intolerable tyranny. For the actual methods of that monarch there is little to be said, but the necessity of the dissolution can be inferred from monastic records themselves, and from the complaints of the most orthodox churchmen. It was not that the monks of 1536 were so much more relaxed than their forefathers for many generations past, but society had begun to outgrow the need for monasticism as a great world institution—a growth which, it must be said, owed much to the civilizing influence of monasticism itself in the past.

Its subsequent history only emphasises the lesson of English history. In France, some of Richelieu's greatest difficulties were with the reform of the monks; and the Revolution swept them away as a state institution, a story which has been repeated in nearly every other European country. That the ideal in itself is healthy is proved by its vitality under voluntarist conditions, and even under

the more definite discouragement of persecution. But no sketch of monasticism can be complete which does not do justice to the unselfish, beneficent work of the individual monk, and to the unanimity with which the modern world has decided against all exceptional privileges for these communities.

G. G. Coulton

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Monastir, BITOLIA OR BITOLJ. Town of Serbia, Yugo-Slavia. 130 m. N.W. of Salonica, with which it is joined by rail, it was the capital of a vilayet of the same name, while Macedonia was under Turkish rule, and was of importance both militarily and commercially. It was a Turkish depot, had manufactures of leather and carpets, and exported grain. It was all allotted to Serbia by the treaty of Bukarest, 1913. During the Great War it was taken by the Bulgarians in Dec., 1915, and regained by the Allies Nov. 19, 1916. *See* Serbia, Conquest of.

Monastir, BATTLE OF. Serbian victory over the Turks in the first Balkan war in Nov., 1912. The main Serbian army, after its victory over the Turks at Kumanovo, Oct. 23-24, 1912, advanced towards Monastir in three columns, one of which took Tetovo on Nov. 1, and another Krushevo on Nov. 6, Prilep being occupied on the previous day. The Turks, commanded by Ali Riza, took up a strong position on the N. of Monastir, on a front of 16 m.

The Serbs attacked on Nov. 15, and next day made a successful assault on the Turks' left wing. On Nov. 17 a Turkish counter-attack was repulsed, and the Serbs advanced across the flooded Seven-itza, the water in places coming up to their necks. A general attack by the Serbs on Nov. 18 drove in the centre of the Turks, who broke and fled, and the victors entered Monastir. In this battle the Serbians took 8,000 prisoners and about 100 guns; their losses in killed and wounded were 5,000, while those of the Turks were 7,000. *See* Balkan Wars.

Monastir, CAPTURE OF. Allied victory over the Bulgarians in the Great War, November, 1916. After the capture of Florina, Sept. 18, 1916, by the Allies, French and Russian forces on the plain and

Serbian troops in the Moglena Mts. on the E. advanced in the attack on Monastir, which the Bulgarians had occupied on Nov. 2, 1915. Both the Bulgarian positions could be turned from the mountains E. of the city, and the most important of these mountains, the commanding height of Kaymakchalan, had been captured by the Serbians on the day that Florina fell to the Allies.

Throughout the closing days of Sept. the Bulgarians tried, without success, to regain Kaymakchalan. On Sept. 30 the Serbians, under Gen. Mishitch, held the whole of this mountain, and on Oct. 3 the Bulgarians abandoned the Starkov Grob ridge, the Serbians pushing on to Petalino and the Tchernia bend. By Oct. 8 the French were within striking distance of Kenali. After continuous heavy fighting



Monastir, Yugo-Slavia. General view of the Serbian town, the scene of much fighting in the Balkan War of 1912 and the Great War

the Serbians succeeded in crossing the Tchernia between Oct. 9-17. Meanwhile, on Oct. 14, the French and Russians had assaulted the Kenali line, but found it impossible to take it by a frontal attack.

In the mountains, fighting, in which Gardilovo was taken and lost, and bad weather delayed the advance of Mishitch, who, however, drove the Bulgarians from the Chuke heights on Nov. 10, and, beating down several counter-attacks, pushed on N., taking Iven, Nov. 12, and Tepavci, Nov. 13-14. The Bulgarians at Kenali were hopelessly outflanked, and on Nov. 14 they withdrew to the Bistritza, with the French and Russians on their heels. Again the Serbians advanced among the hills and outflanked Monastir itself. Finding it thus untenable, the Bulgarians hastily evacuated the city, and French troops occupied it on Nov. 19. *See* Salonica, Expedition to; Serbia, Conquest of.

Monazite. In mineralogy, the name of an anhydrous phosphate of the cerium group of metals, chiefly cerium and lanthanum. Yellow, red, or reddish-brown in colour, monazite contains the rare earths used in the manufacture of gas mantles. A constituent of gneisses, granites, and pegmatites, it is found in Brazil, the U.S.A., Norway, Silesia, Australia, etc. The deposits in N. Carolina are found in river sands, and are obtained by placer washing in a similar way to gold washing.

Monboddo, JAMES BURNETT, LORD (1714-99). Scottish lawyer. Born at Monboddo, Kincardineshire, he was educated at Aberdeen and Edinburgh. Called to the bar, he rapidly acquired distinction, and in 1767 became a lord of session. Far in advance of his age,

he studied the origins of mankind from a new standpoint, and enunciated his views boldly in *The*



Lord Monboddo, Scottish lawyer

Origin and Progress of Language, 1773, and *Ancient Metaphysics*, 1779-99. Lord Monboddo died May 26, 1799. He is most generally remembered from Boswell's frequent references to his theories of human origin and Dr. Johnson's comments on the same.

Moncalieri. Town of Italy, in the prov. of Turin. It stands on the river Po, 5 m. by rly. S. of the city of Turin. On a height above the town is a royal palace dating from 1470, rebuilt in the 17th century, and containing a fine series of pictures illustrating the history of the house of Savoy. Pop. 12,900.

Mönch (Ger., Monk). Mt. peak of Switzerland, in the Bernese Oberland. It rises between the Eiger and the Jungfrau, has an alt. of 13,468 ft., and is covered with snow and ice fields. The first ascent was accomplished by Porges in 1857. The passage of the Mönchjoch Pass from Grindelwald to the Eggishorn Hotel is comparatively easy. See Eiger.

Monchique. Town of Portugal, in the dist. of Faro and the prov. of Algarve. It is 12 m. by road N. of Villa Nova de Portimão and 13 m. S. of the station on the Lisbon rly. Beautifully situated on a spur of the Serra de Monchique, alt. 1,476 ft., it is a noted health resort. There is a trade in wine, olive oil, oranges, etc. At Caldas de Monchique, 5 m. to the S. (alt. 820 ft.), are hot sulphur springs, famous for their curative properties in skin diseases. Pop. 7,000.

Monchiquite. In geology, name given to fine-grained rock belonging to the lamprophyres. It consists chiefly of olivine and purplish augite, while some varieties contain haüyne but none contain feldspar. The rock is so called from the Serra de Monchique in Portugal. See Lamprophyres.

Monchy-le-Preux. Village of France, in the dept. of Pas-de-Calais. Situated 5 m. E. of Arras immediately N. of the Arras-Cambrai road, the village and heights, which had been converted into a series of fortresses by the Germans, were captured by the British, April 11, 1917, and held against German counter-attacks. The British withdrew from it in March, 1918, and the 2nd and 3rd Canadian divisions recovered it on Aug. 26. The village has been "adopted" by the Isle of Wight under the British League of Help scheme, and a cairn erected on the village square commemorates the exploits of the British 37th division. See Arras, Battles of.

Monck, CHARLES STANLEY MONCK, 4th VISCOUNT (1819-94). British administrator. Born at



4th Viscount Monck, British administrator

Templemore, Tipperary, Oct. 10, 1819, the eldest son of the 3rd viscount, he was educated at Trinity College, Dublin, and became a barrister. In 1849 he succeeded to the Irish title, and in 1852 became M.P. for Portsmouth, being a lord of the treasury, 1855-58. In 1861 he became governor of Upper and Lower Canada, and in 1867-68 was



Mönch, Switzerland. The snow-clad peak in the Bernese Oberland seen from Interlaken

the first governor-general of the new dominion. He was made a baron of the United Kingdom in 1866. He died Nov. 29, 1894, his elder son succeeding to the peerage.

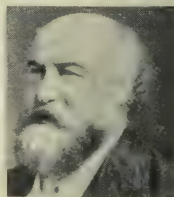
Moncton. City and port of entry of New Brunswick, Canada. It stands on the Petitcodiac river, 89 m. from St. John and 650 from Montreal, with a station on the Intercolonial Rly. It is the headquarters of that line, which has its workshops here, and is the eastern terminus of the national system of which it forms part. There is a good harbour, and the town has manufactures of machinery, corn mills, lumber mills, etc. Pop. 11,300.

Mond, SIR ALFRED MORITZ (b. 1868). British politician. Born at Farnworth, Lancs., Oct. 23, 1868, a son of Ludwig Mond, the scientist, he was educated at Cheltenham College and St. John's College, Cambridge, and became a barrister, being also a member of the firm of Brunner, Mond & Co. In 1906 he was elected Liberal M.P. for Chester, and in 1910 for Swansea, being created a baronet in the latter year. In 1916 Mond joined the coalition government as first commissioner of works. He was minister of health from March, 1921, to Oct., 1922.

Mond, LUDWIG (1839-1909). German chemist. Born at Cassel, Germany, March 7, 1839, and

educated at Marburg and Heidelberg universities, he came to England in 1862 to introduce a process

for the recovery of sulphur from alkali waste, and in 1873, in partnership with Sir John Brunner, erected works near Northwich for the manufacture of soda by the Solvay or ammonia process. Mond



Ludwig Mond, German chemist
Elliott & Fry

also invented a cheap source of power from small coal, utilising the ammonia produced during the process, and discovered a method of recovering nickel from low-grade ores. In 1896 he founded the Davy-Faraday Research Laboratory in connexion with the Royal Institution, London. He became a naturalised British subject in 1867, and died in London Dec. 11, 1909. See Brunner, Sir John; Soda.

Monday. Second day of the week. The word comes from A.S. *Monandæg* (moon's day) and corresponds to the Lat. *Dies Lunae*, cf. Fr. *lundi*. The name Black Monday was originally given to Easter Monday, April 14, 1360, from the darkness and cold experienced by Edward III. of England when lying with his host before Paris. In the north of England the day before Shrove Tuesday is called Collop Monday, from the collops then eaten. The expressions "Cobbler's Monday" and "Saint Monday" in the sense of a holiday are, perhaps, attributable to the old story of the cobblers who, knowing only that their patron saint's day fell on a Monday, made sure of not missing it by keeping every Monday a holiday.

Mondego. River of Portugal. It rises in the Serra de Estrella, and flows first N.E. and then S.W. past Coimbra to the Atlantic Ocean at Figueira da Foz. Length 130 m.

Mondoñedo. City of Spain, in the prov. of Lugo. It stands on the river Masma, 12 m. S. of the coast of the Bay of Biscay and 28 m. N. of Lugo. A bishopric from the 12th century, its cathedral dates only from the 17th. Its Franciscan monastery is now used as a public school and theatre. Manufactures include cotton and linen goods, and lace; marble quarrying is an important industry. Captured from the Moors in 858, it was taken by the French in 1809. Pop. 9,700.



Mondoñedo arms



Sir Alfred Mond, British politician
Russell

Mondovi (anc. *Mons Vici*). City of Italy, in the prov. of Cuneo. Situated on the N. slopes of the Ligurian Alps, near the river Ellero, 17 m. by rly. E.S.E. of Cuneo, it consists of an upper town, alt. 1,835 ft., and a lower town, alt. 1,282 ft. It has a 16th century citadel, a cathedral, and bishop's palace. The industries include tanning and the manufacture of textiles, pottery, paper, majolica, and machinery. Mondovi was the seat of the Mons Regalis printing press, established in 1472. Here, April 21, 1796, the French gained a victory over the Sardinians. Pop. 19,600.

Monessen. Bor. of Pennsylvania, U.S.A., in Westmoreland co. On the Monongahela river, 40 m. S. of Pittsburgh, it is served by the Pittsburgh and Lake Erie and the Pennsylvania Rlys. It has steel, tin-plate, and brick works, foundries, machine shops, and lumber mills. Pop. 18,000.

Monet, CLAUDE OSCAR (b. 1840). French painter. Born at Havre, Nov. 14, 1840, he received his first



Claude O. Monet,
French painter

instruction from Boudin, whom he met in 1855, and in 1862 he entered Gleyre's studio. In 1863 he came into contact with Manet's work, and was greatly influenced by his new method of painting in bright colours laid on in separate tones. He adopted the method, and was joined by Pissarro, Sisley, Renoir, etc., the group becoming known as the Impressionists. Monet was the real founder of Impressionism.

Among his first pictures were *Déjeuner sur l'Herbe*, 1866; *Déjeuner dans un intérieur*, 1868; and figure pictures, *Camille*, 1866; and *La Japonaise*. He went to live by the Seine, at Argenteuil, Vétheuil, and Givernay, and painted the river in all its moods, and in 1871 he visited England to study the Thames, of which, however, his chief pictures were painted during a later visit, 1901-4. He devoted himself to the sea and rocks on the Mediterranean coast, 1884, and at Belle-Île, 1886. He painted series of pictures of one subject under varying effects of light and atmosphere, the first series being *The Haystacks*, 1890-91, and the second *The Façade of Rouen Cathedral*. Of his pictures, now in great demand, M. Durand-Ruel of Paris has a unique collection. See Impressionism.

Moneta, ERNESTO TEÓDORO (1833-1918). Italian publicist and



Ernesto T. Moneta,
Italian publicist

pacifist. Born at Milan, he served with Garibaldi, and was in the Italian army, 1861-67. He edited *La Libera Parola*, 1860-61, and was director of *Il Secolo*, 1867-

96. Throughout his life he devoted himself to the propagation of peace, and presided at the Milan international congress, 1906. In 1907 he was awarded the Nobel peace prize. A warm supporter of Italy's participation in the Great War in 1915, he died at Milan, Feb. 10, 1918.

Monetary Union. Association of states to enable them to use a common monetary standard. The best known is the Latin Union (*q.v.*); there is also a Scandinavian monetary union.

MONEY: THE MEDIUM OF EXCHANGE

Hartley Withers, Author, *The Meaning of Money*

This article deals with money in the economic sense, related articles being Credit; Exchange; Prices; Wealth, etc. For money in the other sense see Coinage; Numismatics; and the articles on the various coins. See also Bagehot; Banking

Money is a device for facilitating that exchange of goods and services which is essential to the division of labour, and so to the specialisation which quickens the development of production. In primitive times, when each individual, or family group, made or provided for himself or itself all the goods and services required, there was no need for money. Each man got or grew his own food, made his own clothes, and built his own hut or other shelter; consequently his clothes, food, and shelter were rough and inadequate, and improvement in the standard of life only became possible as mankind began to congregate in larger groups, and individuals with special aptitudes for making certain goods and rendering certain services concentrated their activities on these special objects, and exchanged them for the goods and services provided by other members of the group who were specialising in other directions.

The division of labour at this early stage was thus facilitated by the system of barter, or exchange of goods for goods. The smith devoted himself to making tools and weapons, and relied on supplying himself with food and clothes and shelter by exchanging his product directly for food provided by the farmer and the hunter, and so on. This system of barter had its obvious difficulties and limitations, which would arise, for example, if the smith was hungry, but the farmer and hunter did not want tools. In such circumstances the smith would try to exchange his product for some article which the food producers would want, either for immediate consumption or because they knew that they would certainly be able to exchange it into anything that they wanted. Thus in primitive communities the

function of money began to be performed by some commodity of general use and acceptability, and this acceptability is still the essential quality of money in the modern sense of the term.

Among commodities fulfilling this requirement and used as currency we find bullets, gunpowder, cattle, cowrie shells, and many other objects that have been generally acceptable because they were either useful or ornamental. At a very early stage, however, the attractions of the precious metals began to prevail, with their appeal to human vanity, which made them always in demand for inlaying the armour of the warrior, and for the adornment of his wives, and securing the favour of the gods when presented as gifts to their temples. Their other advantages, such as their power of resisting wear and tear, and of being melted down and divided up and easily carried, helped to secure their predominance as an acceptable medium of exchange, and at the dawn of recorded history we find Abraham buying a field in which to bury Sara from Ephron the Hittite for 400 silver shekels, which he paid to him by weight, "current money with the merchant" (Gen. xliii, 16).

From lumps of metal exchanged by weight the evolution into coinage was easy. A piece of metal of a certain weight, and stamped as such, is the first step, from which progress is easy to a coin stamped by a monarch or a government, and accepted on the credit of the authority which stamps it as containing a certain quantity of metal of a certain fineness.

As long as money is confined to coined pieces of metal, its volume depends entirely on the supply of those metals, and thus we find in the course of monetary history that variations in the supply of the

precious metals have caused great variations in the general level of prices, with far-reaching economic effects. If the supply of money cannot be increased as fast as the production of other goods, the buying power of money rises and the prices of other goods fall, and this fall in prices has a depressing effect upon industry. Some historians, indeed, have attributed the decrepitude which overtook the Roman Empire to scarcity of the precious metals. On the other hand, great additions to the supply of metals, though the consequent rise in prices has a stimulating effect on production, have led to inflation and economic disturbance.

Coined money, however, has long ceased to be the sole commodity used for the purpose of exchange, having been superseded, except for small retail transactions, by notes issued by banks or Governments, and in countries at a high state of economic civilization by cheques drawn on banks. But these credit instruments, as they are called, only won the essential quality of acceptability by being at all times and without question convertible on demand into gold, which had in the meantime gained undisputed supremacy over silver as the metal of universal acceptability. Banknotes are believed to have originated from the custom that grew up by which people deposited their stores of money and other valuables in the hands of the goldsmiths, who were the medieval forerunners of the bankers. The receipts given by the goldsmiths against deposits of money began to be used for making payments by their holders, who were thus saved the trouble of going and taking money from goldsmiths; this process involved no economy of metal, since the receipt represented so much metal deposited.

The first real step to the development of a credit system was taken when the goldsmiths gave to borrowers, not a bagful of coins, but a paper promise to pay a certain sum. The goldsmiths were encouraged to do this by the experience which had taught them that their promises to pay would pass current as money and would not, for some time, come back to them for payment; they could thus keep a considerable amount of paper outstanding against a much smaller reserve of metal. This system, evolved by bankers, laid the foundation of banking by note issue, which provided the community with a form of money which could be expanded to a very considerable extent beyond the limits of the metallic reserve on which it was

based. In so far as banknotes were accepted in exchange for goods and services in the country in which they were current, they thus performed exactly the same service, and had the same effect upon prices, as metallic money, and should therefore, from the practical point of view, be included within any definition of money that is adopted.

Some economists, however, have maintained that the title money should be applied only to coin; others, again, have thought that it should be restricted to coin and such credit instruments as are legal tender, and so have to be accepted by creditors and sellers in payment of debts or for goods sold.

Note Issue in England

In England legal tender money consists of gold and Bank of England notes, and the Treasury notes (which have been issued since the Great War) up to any amount; of silver up to 40s.; and of bronze up to 1s. The note issue of the Bank of England has been very strictly limited under the Bank Act of 1844, by the provisions of which every note above a certain specified amount has to be represented by its exact equivalent in metal. The Bank Act allows a portion of this metal to be in silver, but the whole of it is in fact always held in gold. The limit of the note issue, which might be backed not by metal but by securities, had been raised before the Great War to £18,450,000. The Bank Act was superseded when the Great War came by the Currency and Notes Act of 1914, under which the legal limit on the Bank's note issue was withdrawn, and Treasury notes were created. But it has been recommended by a committee appointed to inquire into the matter that steps should be taken as soon as possible to re-establish the British banking system more or less on the old basis.

Under that system British money consisted of gold and silver coins, Bank of England notes (which were rarely used in exchange for goods and services, but chiefly as reserves in the hands of the banks against demands made upon them by their customers for money), and cheques drawn on the banks by their customers. By these cheques by far the greater number of commercial transactions were settled, and the cheque thus seems to establish its claim to be considered as money, which we can define as any article or token, whether of metal, paper, or any other substance, which is commonly taken in payment for goods and services. For international pur-

poses gold seems likely to be the only commodity that will possess the essential quality of universal acceptability.

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Money, SIR LEO GEORGE CHIOZZA (b. 1870). British politician and economist. Born at Genoa, June 13, 1870, of mixed Italian and English parentage, he settled in England, and in 1903 assumed the additional name of Money. In 1906 he entered Parliament as Liberal M.P. for N. Paddington, and represented E. Northamptonshire, 1910-18. On the outbreak of the Great War he joined the R.N.V.R., and afterwards served on various government committees. In 1915 he became parliamentary private secretary to Lloyd George, and was knighted, and from 1916-18 was parliamentary secretary to the ministry of shipping. His books include *Riches and Poverty*, 1905, *Insurance versus Poverty*, 1912; *The Nation's Wealth*, 1914; *The Triumph of Nationalization*, 1920.

Money Bill. Any proposal put before parliament which involves the expenditure of public money. The rules and procedure for the passage of such measures into law differ from those of ordinary bills thus: (1) They must be introduced by a minister of the crown; no private member can introduce one. The reason for this is that ministers are responsible for finding the necessary money, and their arrangements would be upset if they had to find sums which were no part of their plans. (2) They can only originate in the House of Commons. By resolutions of 1678 and 1860 the Commons established the sole right of introducing and altering money bills, and this was strengthened by the Parliament Act of 1911. (3) By the Parliament Act the House of Lords was deprived of the right of rejecting money bills, its only remaining power over them. Disputes as to whether a certain measure is or is not a money bill are now avoided by a defining clause in the Parliament Act which further leaves the decision in the hands of the Speaker. See *Parliament Act*.

Moneylender. One who lends money, but especially one who does so for a livelihood. In the United Kingdom, as in other countries, special legislation has been found necessary for the protection of the public against money-lenders. By the Moneylenders Act of 1900 a moneylender is defined as a person whose business is that of lending money, or "who advertises or announces himself or holds himself out in any way as carrying on that business." Pawnbrokers, bankers, insurance companies, friendly societies, building societies, loan societies, and persons or corporations who lend money merely incidentally for business purposes are expressly excepted.

A moneylender must be registered at Somerset House (England) or the offices of the controller of stamps, Edinburgh and Dublin, for Scotland and Ireland respectively. His name and address, or addresses, must be so registered, and he is liable to a penalty if he carries on business (a) without registration, (b) at any address, or under any name other than those registered. If a moneylender lends money without being registered, or if he carries on his business from an unregistered address, he cannot sue for the debt.

All transactions by moneylenders may be revised by the courts, who may reduce any rate of interest which is harsh, unconscionable, or excessive. Transactions which are closed may be reopened. A moneylender must not make any false or misleading statement, under penalty of being deprived, if the court thinks fit, of the profits of the loan. He must always furnish the borrower, on demand, with a true copy of any document connected with the loan. It is for the judge to decide in every case whether interest is excessive; and he always has regard to the circumstances—such as the risk undertaken by the lender, the security, if any, and the like. See Usury.

Money Order. Document issued at certain post offices to enable a person to send money to someone else. When the money is paid in, the names of the payer and of the payee are taken down, and are sent to the particular office at which the order is made payable; without this advice the money will not be paid. Money orders are thus different from postal orders, which can be transferred like cash. The highest amount for which a money order is issued in the United Kingdom is £40, and the charge varies from 4d. to 1s. Money orders can be sent by telegraph, can, like cheques, be crossed for greater

security, and can be sent to most parts of the British Empire, and to most foreign countries.

Moneywort OR **CREeping JENNY** (*Lysimachia nummularia*). Perennial creeping herb of the nat-



Moneywort. Stems and flowers

ural order Primulaceae, native of Europe. Its prostrate stems creep to a length of about two ft., and bear roundish heart-shaped leaves in pairs, and cup-shaped, solitary yellow flowers. A species often confused with it is the yellow pimpernel (*L. nemorum*), with shorter stems, yellow green larger leaves, and smaller flowers.

Monfalcone. Town of Italy, in the former Austrian crownland of Görz and Gradisca. It is 10 m. S.W. of Gorizia and 16 m. N.W. of Trieste, near the Adriatic, is noted for its mineral waters, and was prominent in the Great War. Italian destroyers shelled its shipyards and Italian airmen raided it. It was taken by the Italians, June 9, 1915, but was retaken by the Austrians, Oct. 24, 1917. It passed to Italy when Austria was deprived of Görz and Gradisca under the peace treaty, July 16, 1920. Pop. 5,200. See Caporetto, Battle of; Gorizia; Italy.

Monforte de Lemus. Town of Spain, in the prov. of Lugo. It stands on the river Cabe, and is a junction on the rly. from Leon, 148 m. to the E., to Corunna and Vigo. It has ruins of a medieval castle, a Benedictine monastery, now utilised as a hospital, a fine Renaissance church, and a Jesuit college. Chocolate and linen are manufactured, and there is trade in timber and cattle. Pop. 13,800.

Mongalla. Most S. prov. of the Anglo-Egyptian Sudan. It contains the districts of Bor, Kajo Kaji, Latuka, Mongalla, Moru-Tombe, Refaj, and Yei River. The enclave of Lado, formerly under Belgian administration, is now included in the prov. of Mongalla. The capital is Mongalla, on the White Nile, 1,056 m. S. of Khartum. Area, 63,000 sq. m. Pop. 207,400.

Monge, GASPARD (1746-1818). French mathematician. Born at Beaune, May 10, 1746, he was

educated at Lyons, where, at the age of 16, he became teacher of physica. In 1765 he studied at the military school of engineering at Mézières,



Gaspard Monge, French mathematician

where, three years later, he was appointed professor of mathematics and, in 1771, of physica. In 1783 he moved to Paris, where he had already been elected a member of the Academy, and became examiner of naval pupils. Here he wrote his *Traité élémentaire de la Statique*, 1786. He was minister of marine 1792-93, when he retired to prepare plans and matériel for the public defence.

After a visit to Italy in 1796 to receive the Napoleonic plunder of antiquities and *objets d'art*, he accompanied Bonaparte to Egypt and Syria, and returned to the Polytechnique in 1798. In 1805 he was made a senator and Comte de Pelouse, but lost both dignities on the Restoration. He died July 28, 1818. *Pron.* Monj.

Monghyr. Dist. and town of India, in the Bhagalpur division, Bihar and Orissa. The dist. is a low-lying alluvial tract drained by the Ganges. Nearly half the cultivated area yields two crops annually. Rice, maize, and tobacco are the most important. The town is an important trading centre on the right bank of the Ganges, here crossed by the rly., and opposite the entry of the Burh Gandak river, and contains an up-to-date cigarette factory, which works the increasing supplies of locally grown tobacco. From the 12th to the 18th century it was a Mahomedan stronghold. Area, 3,922 sq. m. Pop. dist. 2,132,900; town, 46,900.

Mongol. Name denoting a racial stock in Mongolia, with offshoots in the Manchurian Amur province and in Chinese Turkistan. Estimated (1911) at 1,800,000, they form, with the Turkic and Tungus stocks, the round-headed Altaian branch of the straight-haired yellow race. The coarse, black hair is scanty except on the scalp. The characteristic Mongolian fold of skin over the inner angle of the eyelids, and the lifted outer angle, produce the well-known slant-eyed effect.

Sturdy, flat-faced, with prominent cheek-bones, they comprise W. Mongols or Kalmuks, and E. Mongols, including the six inner

leagues, the Chakhar, and the outer Khalkas. The Buryat are much Siberianised. Nomad tent-dwelling hunters and herdsmen, essentially shamanist, their vigour has been sapped by lamaism; in Afghan Turkistan the Aimak and Hazara are moslemised. Cradled in the upper Amur basin, they shared in the political confederacies which dominated Central Asia for centuries and, under Jenghiz Khan and his successors, extended the 13th century empire of Tartary from the Dnieper to the Pacific. Under Kublai Khan a Mongol dynasty, 1290-1368, was imposed upon China. Their Altaic language is written in syllabic signs resembling knots on the left of a vertical stem, based upon Uiguric, and introduced in 1240.

In various forms—Mongolian, Mongoloid—the term also designates the whole yellow race, one of the three primary divisions of mankind. In this sense it embraces, besides the Altaians, numerous stocks marked by much racial admixture, climatic and linguistic differentiation, and cultural development, such as the practice of agriculture or seafaring. Thus the northern Mongols include, with the Altaians, the Koreans and Japanese, the Finno-Ugrians, the Palaesiatic or E. Siberians, and more remotely the Eskimos and American Indians. The southern Mongols comprise the Tibetan, Chinese, and Indo-Chinese peoples, and more remotely the Malays. See Asia; Ethnology; Kalmuk; consult also The Mongols, a history, J. Curtin, 1908.

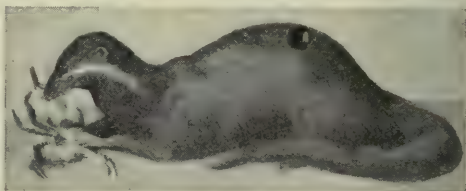
Mongolia. Outlying region of N. China. It is an extensive area surrounding the desert of Gobi in Central Asia: At an alt. of 3,000 ft. it forms an intermediate region between the high plateau of Tibet and the Arctic lowland of Siberia.

In winter the cold is intense; in summer the slight rains produce pasture and fodder shrubs for the sheep, goats, horses, and camels of the nomadic inhabitants, Mongols or Kalmuks. The Irtysh and Selenga are the chief rivers. Urga, the chief town, trades with Kiakhtha, on the Siberian frontier, chiefly in wool, skins, and furs. In 1917 a motor-car freight service ran during the summer from Urga to Kurgan.

Outer Mongolia, a vast area with indefinite boundaries on the Chinese side, declared for an autonomous government about the end of 1911. This declaration received Russian support, and various conventions were made with Russia and China, 1912-15, which defined Chinese suzerainty, secured Mongolia from colonisation by Russia or China, and promised Russian financial assistance in building rlys. In these negotiations Outer Mongolia was held to be the dists. formerly administered by Chinese officials from Urga, Kobdo, and Ulyasutai. In 1919 China cancelled these agreements. At the end of 1924 a Soviet government was set up. Area, 1,368,000 sq. m. Pop. 2,500,000.

Bibliography. Unknown Mongolia, D. Carruthers, 1913; A Tour in Mongolia, B. Gull, 1920; Old Tartar Trails, S. A. Kent, 1920.

Mongoose (*Herpestes griseus*). Small carnivorous mammal of the family Viverridae, which includes



Mongoose. Specimen of *Herpestes urva*, a variety which lives on crabs and shell-fish

the civet-cats, and is restricted to the Old World. More closely allied to the ichneumon, the Indian mongoose is a smaller animal with greyish fur and long, bushy tail. It is famous for the prowess it displays in destroying snakes, even the deadly cobra failing to use its natural defence against an enemy so agile. See Civet.

Monica (332-387). Saint and mother of S. Augustine of Hippo. Born of pious parents in good circumstances, she was married at an early age to Patricius, who became converted through her good example. She had two sons, one of whom, famous as S. Augustine (q.v.), always attributed his conversion to her prayers.

Monier-Williams, SIR MONIER (1819-99). British Orientalist. Born in Bombay, Nov. 12, 1819, he came to England when a child, and was educated at King's College, London, and Balliol College, Oxford. He



Mongolia. Map of the extensive region of Northern China separating that republic from Siberia and Manchuria

was successively professor of Oriental languages at the East India College, Haileybury, and of Sanskrit at Oxford, where the Indian Institute was founded mainly at his instigation. He died April 11, 1899. His most important works are *Hinduism*, 1891; *Indian Wisdom*, 1893; and *Sanskrit-English Dictionary*, 1899.



Sir M. Monier-Williams,
British Orientalist

Monifieth. Police burgh of Forfarshire, Scotland. It stands on the N. side of the Firth of Tay, 6 m. from Dundee, and has a station on the N.B. Rly. The industries include jute mills and machinery works. Until the 19th century it was a seaside village. Pop. 3,100.

Monism (Gr. *monos*, alone, single). Theory which refers all the phenomena of the universe to a single principle, whatever this principle may be. Thus materialists, pantheists, idealists, hylozoists, are all monists. Monism is thus opposed to duality and plurality. While forced to acknowledge the existence of contraries (body and soul, mind and matter) it attempts to remove them by explaining them as modifications of a single fundamental principle. Thus, mind and matter and their phenomena are manifestations of some one substance which is neither. The term is also applied to that view of the world which, denying anything transcendent (beyond the material universe), regards the world as a connected whole varying in accordance with fixed laws inherent in itself, to which even man is subject. See Theism.

Monist, THE. Anglo-American quarterly magazine. Founded in 1890 by Dr. Paul Carus, published in London and Chicago, and devoted to the discussion of various aspects of monism and other philosophical questions, it is issued in England by the Open Court Co., 149, Strand, London, W.C.

Monitor (*Varanus*). Genus of large lizards of the family Varanidae. Including about 30 species, they are found in Africa, Southern

Asia, Australasia, and Oceania. Distinguished from other lizards by their long forked tongue which retracts into a basal sheath as in the snakes, they are long in the body, have no dorsal crest, are thickly covered with small scales, and some attain a length of over 6 ft. In colour they range from blackish to greenish brown and grey. Most of them live in burrows near water, and are carnivorous, eating birds, small mammals, eggs, and frogs. Monitors swim well with the aid of their long and powerful tails, used also as a weapon of defence. They are eaten by the natives in some parts of India, and their eggs are highly esteemed in Burma. See Lizard, colour plate.

Monitor. Armoured vessel of slow speed, light draught, and low freeboard, designed to operate in shallow waters. Her sides are



Monitor employed by the British Navy. H.M.S. General Wolfe, carrying an 18-in. gun
Abrahams, Devonport

heavily "blistered," i.e. have great, out-curving bulges upon them for the purpose of resisting torpedo attack. Monitors carry only one or two large guns and offer a very small target. The first monitor was built by John Ericsson and used in the American Civil War. As the result of its success British naval experts urged the construction of a similar type of ship, and out of this really grew the turret-ship. But the monitor proper was never seriously developed, and previous to 1914 the British navy possessed only a few of these vessels. The first to be used by them in the Great War were originally built for the Brazilian navy. They were employed on the Belgian coast, 1914 and 1918, the Severn (*q.v.*), Mersey (*q.v.*), and Humber being conspicuous. As the Great War proceeded more

powerful monitors were built, until vessels of this kind were capable of mounting an 18-in. gun. They were later disposed of. See American Civil War; Ericsson, John; Hampton Roads; Merrimac; Navy, British.

Monk (Lat. *monachus*, from Gr. *monos*, alone). Solitary person, and specifically a male member of a monastic community. Originally it was applied to the hermits who passed their lives in solitude in desert places. At a later date these solitary were collected in villages or lauras, where they dwelt apart, but met for divine worship and were under the control of an abbot. From this developed the practice of living in community in a coenobium or monastery—but the old name was maintained.

Until the 13th century the name monk was in general use for a member of a religious order, but the rise of the friars introduced a new type of religious life, and the term became restricted to members of the older orders of enclosed monks as distinguished from the wandering friars. Strictly speaking, it is now applied only to the Benedictines and the various ancient

orders which have sprung from them, or were modelled on the Benedictine Rule, as the Cistercians, Augustinians, and Carthusians. See Asceticism; Benedictine; Black Friar; Carmelites; Carthusians; Cluniac, etc.; Hermit; Monasticism.

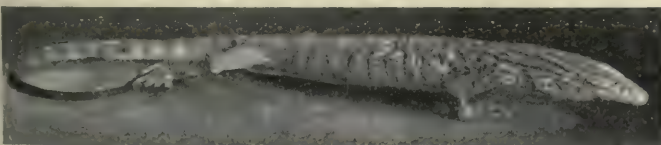
Monk, GENERAL. See Albemarle.

Monk Bretton OR BURTON Urban dist. of Yorkshire (W.R.) It is 2 m. from Barnsley. Now an industrial area with textile factories, it has the remains of a monastery founded in 1157, hence its name. Pop. 4,800.

Monk Bretton, BARON. British title held since 1884 by the family of Dodson. John George Dodson (1825-97), the son of Sir John Dodson (1780-1858), a prominent lawyer, was born Oct. 18, 1825. Educated at Eton and Christ Church, Oxford, he spent some years in travel, and in 1857 entered



2nd Baron Monk Bretton,
British politician
Elliott & Fry



Monitor. Specimen of Desert Monitor, *Varanus griseus*

the House of Commons as M.P. for Sussex. He remained therein until made a baron in 1884. As a Liberal minister, he was financial secretary to the treasury, 1873-74, president of the local government board, 1880-82, and chancellor of the duchy, 1882-84. He died May 25, 1897, and was succeeded by his son, John William (b. 1869), who was in the diplomatic service, 1894-97, and was later an alderman of the L.C.C.

Monkey. Popular name for all mammals of the order Primates, with the exception of man and the anthropoid apes. Monkeys generally are distinguished from man and the apes by their smaller size and the shape of the molar teeth, while individual groups have tails, naked callosities on the buttocks, and cheek pouches. The narrow, laterally compressed breastbone invariably distinguishes the skeleton. It is usual to divide the monkeys into two great families, the Cercopithecidae of the Old World and the Cebidae of the New. The main points of distinction are that the nostrils of all the American species are more widely separated and more laterally situated than in those of the Old World, that they have four more teeth, and that none of them have the cheek pouches and the callosities on the buttocks that many of the latter possess. Many of them have prehensile tails, which is not the case with any of the species belonging to the Old World. The New World monkeys are, however, much less agile on the whole than the Old World monkeys, neither are they as intelligent.

Monkeys occur throughout Africa, Asia, and the hotter parts of the American continent. In Europe they still linger on the Rock of Gibraltar, but were formerly much more widely distributed, the fossil remains of one species of Macaque occurring in Essex. Nearly all monkeys are arboreal in habit, and most of them are very agile in their movements. They are usually found in small companies under the leadership of old males. They may be regarded as omnivorous, fruit, nuts, and leaves constituting their chief diet; but insects and small birds are largely eaten, while few monkeys can resist the temptation of robbing a bird's nest of its eggs. With the exception of a few of the larger species, monkeys are timid and inoffensive in disposition.

Economically they are of small importance, though the skins of certain species are used as fur, and in some districts the bodies are eaten by the natives. They often

do considerable damage to orchards and growing crops. As pets, monkeys have long been popular on account of their semi-human ways and amusing antics; but their delicacy of constitution usually makes their life in captivity short. *See* Animal; Ape; Baboon; Capuchin; Colobus; Douroucoulis; Diana Monkey; Howling Monkey; Mammal, etc.; Primates.

Monkey Flower (*Mimulus langedorffii*). Perennial riverside herb of the natural order Scrophu-



Monkey Flower. Foliage and flowers of the N. American herb

lariaceae. Native of N. America, it has oval-oblong, coarsely toothed leaves, and large yellow tubular flowers with widely expanded mouth. Some of the varieties are richly spotted, or blotched with crimson, maroon, or purple. *M. moschatus*, a much smaller, more delicate plant, is the familiar musk of window-gardens.

Monkey Pot (*Lecythis ollaria*). Large tree of the natural order Myrtaceae, native of tropical America. It has alternate, leathery leaves, and large six-petaled flowers. The fruit is a hard, woody capsule with a distinct lid, and of sufficient size to be used as a water-vessel by the natives. When the



Monkey Pot, leaves and fruit. Inset, seeds, showing thick shell

large, bitter, hard-shelled seeds are ripe, the lid falls off to allow their escape. *L. zabucajo* supplies the

Sapucaí nuts, which are larger than, and superior to, Brazil nuts. The bark of *L. ollaria* consists of many thin layers of a papery material, which the Indians separate and use for cigarette wrappers.

Monkey Puzzle Tree. Popular name for the Chile pine (*Araucaria imbricata*). A native of Chile, it was introduced into Gt. Britain in 1796. It needs a rich soil. *See* Chile Pine.

Mon-Khmer. Sub-family of agglutinative languages spoken in S.E. Asia. It forms with the Munda sub-family the Austroasian family. The Mon occupied the Irawadi valley before the Burmese immigration; the Khmer are a mixed Indonesian people in Cambodia. In India (1911) its seven languages were spoken by 555,417 people in all, including Mon, 179,444; Palaung, 149,252; Wa, 16,511; Khasi, 200,872; and Nicobarese, 8,418. Related dialects, spoken by unenumerated aboriginal tribes in Indo-China, are remnants of the speech dominant in Further India before the Tibeto-Chinese advent. *See* Austric; Talaing.

Monkhouse, WILLIAM COSMO (1840-1901). British poet and critic. Born in London, March 18, 1840, his father was a solicitor. Educated at St. Paul's School, he entered the board of trade in 1857, and eventually became an assistant secretary therein. He died July 2, 1901. Monkhouse wrote poems and a novel, *A Question of Honour*, 1868, but his best work was probably done as an art critic. He wrote *A Life of Turner*, 1879; *The Italian Pre-Raphaelites*, 1887; *In the National Gallery*, 1895; and *British Contemporary Artists*, 1899, as well as many articles for *The Saturday Review* and the periodicals devoted to art. Of his verses *The Christ upon the Hill*, a ballad, may be mentioned. Two other volumes are *A Dream of Idleness* and other Poems, 1865; and *Corn and Poppies*, 1890. He also wrote a *Memoir of Leigh Hunt*, 1893.

Monkland Canal. Waterway of Scotland. It runs from Port Dundas on the Clyde in Glasgow to the N. Calder river at Calderbank, passing through Coatbridge. It is part of the Forth and Clyde navigation, and its length is 13 m. Begun in 1761, it was finished in 1790, to carry the coal of the Lanarkshire coalfield. In 1846 it was acquired by the Forth and Clyde Canal, and in 1867 the united system passed into the hands of the Cal. Rly. The name is that of two large parishes in Lanarkshire, New and Old. Both are on the N.

valder, and in the coal-mining area. In the Middle Ages the land here belonged to the monks of Newbattle, hence the name.

Monkshood (*Aconitum napellus*). Perennial herb of the natural order Ranunculaceae. A native of Europe and Asia, it has a black, spindle-shaped rootstock, and the alternate leaves are cut into sharply toothed lobes. The large, hood-shaped, dark-blue flowers are clustered closely round the upper part of the stem. The whole plant is virulently poisonous, and from its root is obtained the drug aconitine. See Aconite.

Monkwearmouth. District of Sunderland. Formerly a separate village, it stands on the N. side of the Wear, with a station on the N.E. Rly. A bridge over the river connects it with Sunderland. Historically it is noteworthy because in the 7th century Benedict Biscop founded a Benedictine monastery here. The parish church of S. Peter stands on the site, and contains a porch and other remains of the monastic church. Monkwearmouth began to be an industrial centre about 1775, when a ship-building yard was opened. Other industries are ironworks and coal mines. See Sunderland.

Monmouth. British armoured cruiser. She was laid down on the Clyde in August, 1899, launched in Nov., 1901, and first commissioned Dec., 1903. Her length was 449 ft.; beam, 66 ft.; displacement, 9,800 tons. H.p. and speed were respectively 22,000 and 22 knots, the armament consisting of fourteen 6-in. guns and two torpedo-tubes, and the side armour being 4 ins. thick. Attached at the outbreak of the Great War to the south-western squadron under Rear-Admiral Sir C. Craddock, she was lost with all hands in action with the German squadron under Admiral von Spee off Coronel, Nov. 1, 1914, Captain Frank Brandt being in command. When last seen by the Glasgow, the Monmouth was heading towards

the German line, with the object of firing her torpedoes at the enemy or of attracting their attention while the Glasgow got away. See Coronel, Battle of.

Monmouth. Mun. borough and the county town of Monmouthshire. It stands at the junction of the Monnow and the Wye, 19 m. from Hereford, with stations on the G.W. Rly. It is almost surrounded by hills. Troy, on the other side of the Monnow, is part of the borough. The chief buildings are the modern church of S. Mary, the old church of S. Thomas



Monmouth arms

Becket, and the shire hall. There is a grammar school founded in the 17th century, and the town has statues of Henry V, who was born in the castle here, and of Hon. C. S. Rolls, whose family has long been connected with it. Little remains of the castle, but Monnow bridge is still protected by a gateway. There are some manufactures. Since 1921 it has been an Anglican diocese.

Monmouth was fortified by the Saxons, and continued to be a border fortress as long as the Welsh were hostile to the English. It became a borough in the 13th century, and was first represented in Parliament in the 16th. It was long famous for the caps made here, mentioned by Shakespeare (Henry V). For nearly 400 years it has held an annual fair in Whit-week. Market days, Mon. and Fri. Pop. 5,300.

Monmouth. City of Illinois, U.S.A., the co. seat of Warren Co. It is 28 m. E.N.E. of Burlington, and is served by the Chicago, Burlington and Quincy and other rlys. The seat of Monmouth College, it has a Federal building, courthouse, city hall, and county library. Agricultural implements, soap, cigars, and pottery are manufactured, and trade

in agricultural produce and cattle is carried on. Settled in 1825, it was incorporated in 1836, and became a city in 1852. Pop. 8,100.

Monmouth, JAMES SCOTT, DUKE or (1649-85). English prince. The son of Charles II by Lucy Walters, he was born at Rotterdam, April 9, 1649, during his father's exile. The king provided for him, although some doubted the paternity, and after the Restoration had him at court. In 1663 he was made duke of Monmouth, and in the same



James Scott, Duke of Monmouth



Monmouth. Fortified 13th century gateway on the bridge over the Monnow

year was provided for by a marriage to Anne Scott, the wealthy countess of Buccleuch, being created duke of Buccleuch. He saw service with the fleet in the short war with France in 1678, and against the Covenanters, 1679.

When the question of the succession to the throne became urgent, Monmouth was taken up by Shaftesbury and those who desired to exclude James, duke of York. Public feeling ran high, and at one time Monmouth was in banishment, at another he was hailed as the coming king. In 1683, just after the Rye House plot, in which he was concerned, the duke took refuge in Holland, where he was when Charles died and James became king. In Holland Monmouth



Monmouth. Silver medal struck by his adherents to commemorate the execution of the duke
British Museum



H.M.S. Monmouth. British armoured cruiser sunk in the battle off Coronel, Nov. 1, 1914

Cribb, Southsea

met Argyll and other malcontents, and an expedition to England was arranged. The duke landed at Lyme Regis, and he was greeted as King Monmouth in the western counties. He attacked the royal troops at Sedgemoor without success, July 6, 1685, and was obliged to flee. He reached the New Forest, but was taken at Ringwood and beheaded in London, July 15, 1685. Monmouth left two sons: James, earl of Dalkeith, the ancestor of the dukes of Buccleuch; and Henry, earl of Deloraine. *See* Sedgemoor; consult also Life, G. Roberts, 1844; King Monmouth, A. Fea, 1902.

Monmouthshire. County of England, although for many purposes regarded as part of Wales. In the W. of the country, it is bordered by Wales proper and has a coastline on the Severn estuary of 21 m. The surface is generally hilly, especially in the N. and N.W., where several summits exceed 1,500 ft., the highest being the Sugar Loaf. Along the coast it is protected by earthworks.



Monmouthshire county seal

The chief rivers are the Wye, Usk, Ebbw, Rhymney, and Monnow. Monmouth is the county town, other places of importance being Chepstow, Abergavenny, Tredegar, Abertillery, Abersychan, and Ebbw Vale. The urban districts include also Abercarn, Bedwellty, Blaenavon, Llantarnam, Panteg, Pontypool, Risca, and Rhymney. The chief industry is coal-mining, the S. Wales coalfield stretching into the county. The coal is found in the valleys in the W. of the county, where many populous towns have sprung up. Wheat, rye, and other crops are grown, but much land is given up to sheep. Orchards are plentiful. Away from the coalfield, the county contains some magnificent scenery. It is served by the G.W. and L. & N.W. Rlys. and by canals. Five members are returned to Parliament. It is in the Oxford circuit and the diocese of Llandaff.

Originally part of the Welsh kingdom of Gwent, Monmouthshire remained in Wales until made a shire in 1536. It had been conquered by King Harold, and herein the Normans built a number of castles, which for long were maintained to protect England from the inroads of the Welsh. The most notable were perhaps those of Chepstow, Raglan, Caldicot, Abergavenny, Penhow, Monmouth, and Skenfrith. The county



Monmouthshire. Map of the English county on the border of South Wales

contains Tintern and Caerleon. Area, 546 sq. m. Pop. 450,700.

In literary matters the county is associated with Geoffrey of Monmouth and William Thomas, the Welsh poet. Jeremy Taylor was imprisoned in Chepstow Castle, and the Wye inspired Wordsworth's famous lines on that river.

Bibliography. Handbook of the Geography and History of Monmouthshire, A. Morris, 1901; History of Monmouthshire, J. A. Bradney, 1904-11; Historical Tour through Monmouthshire, W. Cox, 1904; Shropshire, Hereford, and Monmouth, A. G. Bradley, 1908.

Monmouthshire Regiment. Regiment of the British army, established when the Territorial Force was organized in 1907. It consists of territorial or volunteer battalions only, and in 1914 there were three of these, one each at Newport, Pontypool, and Abergavenny. All were mobilised in August and went to France early in 1915. The 1st and 3rd battalions were attached to the 5th Army Corps, and all fought near Ypres in April, 1915. *See* Territorial Army.

Monoceros OR THE UNICORN. Large constellation lying in the celestial equator E. of Orion. It is without any conspicuous stars, but is noted for its multiple stars, star clusters, and nebulae.

Monochlamydeous (Gr. *monos*, alone, single; *chlamys*, cloak). Term applied to plants whose flowers have a single envelope or calyx. *See* Flower.

Monochord (Gr. *chordē*, string). Musical instrument with a single vibrating string. On this the acoustical intervals, octave, fifth, fourth, major third, minor third, etc., can be obtained by mathematical ratio. *See* Acoustics; Harmonic Series.

Monochrome (Gr. *chrōma*, colour). In art, a picture executed in different tints of one colour, the tints representing light and shade. Thus a sepia (q.v.) drawing is a monochrome, but the term is not confined to any one medium.

Monocline (Gr. *klinein*, to incline). In geology, term used for a change in inclination or dip of the strata of rocks, which afterwards continue in their general original direction. Such sudden changes in rock strata occur in the Rocky Mountains on a large scale. *See* Geology; Rocks.

Monocoque (Fr., single shell). In aeronautics, term applied to aircraft bodies built up of a skin of thin veneer wood or similar material in the form of a single shell, and depending on the strength of the skin itself instead of upon an internal framing.

Monocotyledon (Gr.). One of the two well-marked divisions of the Angiosperms, or flowering plants. It is so called from the seed, the embryo being provided with only one cotyledon or seed-leaf. A grain of wheat or maize on germinating sends up at first a single leaf (monocotyledon); a bean or acorn at the same stage of development exhibits two leaves (dicotyledons). The leaves are long and narrow, and their veins run parallel to each other; the stems do not have secondary wood, and the flowers nearly always have their parts in threes or multiples of three.

Monod, GABRIEL (1844-1912). French historian. Born at Ingouville, Havre, March 7, 1844, the son and grandson



Gabriel Monod,
French historian

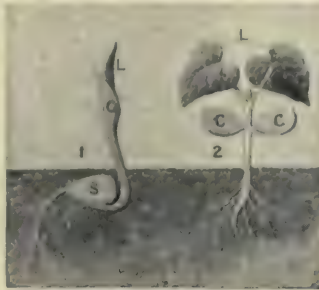
of Protestant ministers, he was educated in Havre and Paris. After travelling and studying in Italy and Germany, he became, in 1868, lecturer on history at the École des Hautes Études, Paris. He was afterwards in succession professor of history there, at the École Normale, and the university of Paris, retiring in 1905. In 1875 he founded *La Revue Historique*. Monod's writings deal largely with the sources of French history, and include *Bibliographie de l'Histoire de France*, 1888. He died April 10, 1912.

Monogenism (Gr. *monos*, single; *genos*, kind). Theory attributing to all mankind descent from one original stock, and specifically from a single pair. Its alternative, polygenism, accounts for the physical diversity of the white, yellow, and black races by postulating for man a plural origin. Some monogenists content themselves with the traditional interpretation of the Biblical story of Adam and Eve as the first parents of the human race. Others rely upon biological evidence of the specific unity of mankind in the fact that any interracial union may produce fertile offspring. See Anthropology.

Monogram (Gr. *monos*, single; *gramma*, letter). Term usually applied to a combination of two or more letters into a single cipher, used as a kind of heraldic device in lieu of crest or arms on seals, carriages, etc.; by artists and craftsmen



Monogram combining
letters ALNM



Monocotyledon. Diagrammatic representation of the difference between seedlings of (1) Monocotyledon, and (2) Dicotyledon. 1. Germinated seed of maize, S, with single cotyledon, C. 2. Seedling of bean, with two cotyledons (C C). The first true leaves, L, are seen above the cotyledons

for authenticating their work, e.g. pictures and pottery; in commerce as trade-marks; and, generally, for various similar purposes. Familiar examples are the sacred monogram embroidered or engraved on ecclesiastical vestments and utensils, and the royal and imperial cipher seen on the insignia of some orders of knighthood, as on the grand cross of the royal Victorian order. See Labarum.

Monograph (Gr. *monos*, single; *graphein*, to write). Book, pamphlet, or work, giving an account or description of some single thing or connected series of things.

Monolith (Gr. *monos*, single; *lithos*, stone). Stone block, usually monumental and of large dimensions. It may be an unhewn menhir; the capstone or support of a megalithic monument; a hewn obelisk; a sarcophagus; a sculptured temple, or a colossal statue. Two statues of Rameses II at Thebes weighed 900 tons each. There are roof-beams 40 ft. long at Thebes; 170-ton lintels in Peru; a partly quarried block, 68 ft. long, of 1,100 tons at Baalbek. Huge monolithic sarcophagi in Egypt, and sculptured deities in India and Easter Island are extant. See Assyria; Carnac; Inca.

Monomania (Gr. *mania*, madness). Insanity with regard to one subject or group of subjects. See Insanity.

Monongahela. River of the U.S.A. Rising in Marion co., W. Virginia, it flows N.E. to its junction with the Cheat and thence N. to unite with the Allegheny at Pittsburg in forming the Ohio. About 230 m. long, its main channel is navigable throughout.

Monongahela. City of Pennsylvania, U.S.A., in Washington co. On the Monongahela river, 30 m. S. of Pittsburg, it is served by the Pittsburg and Lake Erie and the Pennsylvania rlys. It has planing

mills and iron and steel works, and manufactures glass, flour, and paper. Monongahela was settled 1792, incorporated 1833, and chartered as a city 1873. Pop. 8,700.

Monophysites (Gr. *monos*, single; *physis*, nature). Followers of a heresy which gave rise to a schism in the Eastern Churches after the Council of Chalcedon in 451, and spread widely in Egypt and Asia Minor. It taught that the divine and human natures were so intimately united in the one Christ that He is partly divine and partly human, yet that the two natures became actually one. This heresy was developed by Dioscorus, patriarch of Alexandria, and its condemnation by the Orthodox Church was rejected by the Coptic Church, which has ever since held an isolated position. The heresy was repeatedly condemned by the Church councils, and the Monophysites split into several sects. It now exists only in name, the actual teaching of the Coptic Church and other Jacobite bodies being apparently orthodox. See Jacobite Church.

Monoplane. In aeronautics, name given to a type of aeroplane which has only one set of main supporting surfaces. Many of the earliest types of aeroplanes were monoplanes, this type of flying machine being more efficient in lifting power for each square foot of surface than the biplane or the multiplane. It is, however, not so easy to strengthen properly as the biplane, and the expanse of its wings must necessarily be much greater for carrying a given load than machines with two or more wings. One of the earliest of successful monoplanes was that of Louis Blériot, which flew the English Channel, July 25, 1909, and since then the type has been successfully developed for war purposes. Its structure allowing a pilot a better view than any other type except the flying boat. See Aeroplane.

Monopoli. Seaport of Italy, in the prov. of Bari. It stands on the Adriatic, 8 m. by rly. S.E. of Polignano, and 26 m. S.E. of Bari. It has a castle, built by Charles V in 1552, and a cathedral. Oil, wine, flour, fruit, etc., are exported, and woollen and cotton goods manufactured. Pop. 24,100. (f. . .)

Monopoly (Gr. *monos*, alone; *pōlein*, to sell). Exclusive right to trade in particular commodities. In England such rights were granted by successive sovereigns to certain favoured subjects, to the disadvantage of all possible rivals and of consumers. The practice provoked growing public hostility, and reached its height in

the reign of Elizabeth. Parliament long protested against this inequitable grant of royal favour, but it was not until the close of the reign of James I that the Statute of Monopolies (1624) became law. An exception was made in this statute in favour of new and original inventions, which were protected under letters-patent for a period of 14 years or less, whence the modern law of patent arose.

The fight against monopolies was supported by many authorities, including Coke, who in his Institutes quotes the clause in Magna Carta: "All monopolies concerning trade and traffic are against the liberty and freedom granted by the Great Charter, and divers other Acts of Parliament." The term monopoly is also used of the subject of a monopoly, e.g. matches are a monopoly in France. In a figurative sense, a person may be said to have a monopoly of the conversation, etc. See Patent Law; Trust.

Monorail. System of transport in which a single rail is used to support the weight of a carriage or truck. A monorail system may have certain lighter guiding rails, which are, however, not absolutely essential to the system, the whole weight of the carriages being borne on one rail. It was early realized that a single rail offered the advantages of cheapness, concentration of weight, high speed, and possibly low cost of upkeep, but the system has not proved a commercial success generally. In 1882 a single rail on A-shaped supports was constructed in Algeria, and in 1886 a line between Listowel and Ballybunion was constructed in Ireland, the engine possessing duplex boilers, one on each side of the rail. A similar rail has been successfully operated by electricity at the Ria mines in France. This A-shaped system of supporting the rail is known as the Lartigue system, after its inventor.

In the Langen system the carriages are suspended from an overhead rail, and such a line, built between Barmen and Elberfeld, has proved successful. The system is worked by electricity.

In the most important development of the monorail system a gyroscope provides the balancing force. In 1907 Louis Brennan (*q.v.*) exhibited such a system before the Royal Society. A car was supported on a single track laid on the ground, and kept in equilibrium by a gyroscope, with flywheels moving at a speed of 7,500 revolutions per minute. A carriage containing 40 passengers was successfully operated in 1909,

the gyroscopic wheels revolving in a vacuum at 3,000 revolutions per min. Richard Scherl, in Germany, also carried out, in 1910, a series of experiments with the gyroscopic system, but none of the systems has gone beyond the experimental stage, though they hold out great possibilities. See Gyroscope; Railways.

Monosoupage (Fr., single valve). In aeronautics, name applied to a type of aero-engine in which only a single valve is used for each cylinder. Petrol and air, in the form of a mixture too rich in petrol to ignite, was supplied to the crankcase. Ports from the crankcase led to the base of each cylinder, and these ports were uncovered by the piston at the bottom of each stroke.

On the induction stroke some of this rich mixture entered the cylinder, where it was mixed with air admitted through the exhaust valve, which was made to remain open past the end of the exhaust stroke. The over-rich mixture was thus diluted to form an explosive mixture, which was compressed on the remaining portion of the piston's upstroke, and fired in the manner common to all internal combustion engine cylinders. On the firing stroke the ports at the bottom of the cylinder were again opened to the crankcase, but the richness of the mixture therein prevented any ignition, and the permanent pressure of the explosion in the cylinder prevented any flow of mixture into the cylinder. See Aero-Engine.

Monotheism (Gr. *monos*, single; *theos*, god). System of religious thought and practice which admits only one God. It is thus opposed to polytheism, which admits and worships many gods, and to henotheism, which worships only one God, but admits that others may exist. All theories of a dualistic origin of the universe, involving the essential evil of matter, are equally inconsistent with belief in one God. Whether monotheism is the oldest form of religion is uncertain. The very early worship of the sun and other natural objects may have originated in a vague belief in one supreme power, which was manifested in various ways, but the evidence tends in the other direction. The earliest cosmogonies known are dualistic, and indicate a struggle between the powers of good and evil. In probably all nations, except the Hebrew, polytheism was at one time or another the prevailing religion; and even the O.T. Hebrews show a constant tendency to fall into it. See Deism; Theism.

Monothelites (Gr. *monos*, single; *theletēs*, a person who wills). Followers of a heresy which arose in the Eastern Churches as the result of an attempt to harmonise orthodox and monophysite doctrines. It taught that, while in the Person of Christ there existed two natures, the divine and the human, yet these two natures did not possess separate divine and human wills, but only one will, partly divine and partly human. The heresy appears to have originated with Severus (d. 535), a deposed patriarch of Antioch. It was finally condemned by the Council of Constantinople in 680, and the decision was accepted by the Church of England at the Council of Hatfield soon afterwards.

Monotremata (Gr. *monos*, single; *trema*, hole). Name given by zoologists to the Prototheria, or lowest order of mammals, found in Australasia and New Guinea. They include the duck-mole and the two spiny ant-eaters. These mammals have only one excretory aperture, whence the name, and are oviparous. See Mammal.

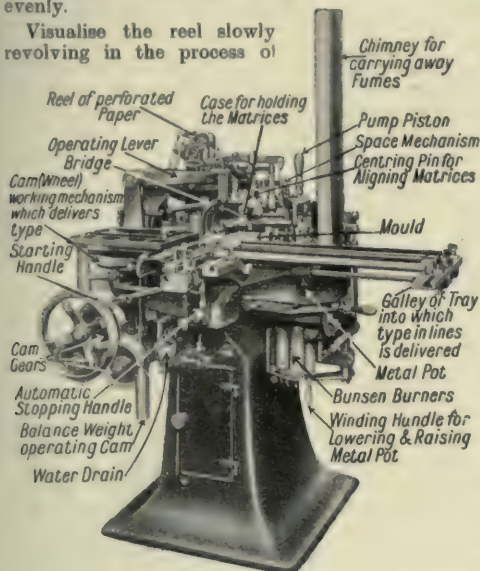
Monotype. Machine used by printers for setting up words from MS. into single letters of movable type—hence its name. It was invented about 1887 by Talbot Lanston, an American lawyer; in 1901 it was commercially used in England, and The Times adopted it in 1909. Its product is akin to that of the hand compositor, each letter cast in a line being a distinct and separate unit, and not an integral part of a solid line as the product of the linotype and the intertype, from both of which the monotype differs, not only in mechanism, but in principle, inasmuch that alterations can be effected by hand without the recasting of an entire line, and the type itself can be readily accommodated to fit round illustrations.

Two distinct operations are involved and two distinct machines are employed: (1) a keyboard, like a typewriter, for perforating a roll of paper somewhat on the principle of a pianola; and (2) a machine casting the single letters of type, and automatically assembling them into words.

The initial stage is effected by the operator manipulating a keyboard, the finger keys embracing all the characters of the alphabet, together with all the possible widths of spaces necessary to evenly finish off a line in perfect vertical alignment. The depression of a key perforates a hole in a reel of paper, each hole representing a space or a letter. As the

allotted width of line is nearing completion, a bell automatically warns the operator, and a small dial, covered with figures and termed the justifying scale, swings into view. By a glance he is enabled to know the space required to complete his line, this calculation having been automatically accomplished by the scale, and the depression of the requisite key completes the line, i.e. the last perforation after the bell rings will eventually mathematically adjust a line by distributing spaces equally between the words so that the line ends evenly.

Visualise the reel slowly revolving in the process of



Monotype. The upper picture shows a keyboard machine for preparing a perforated paper reel, which is afterwards placed in position in the casting machine, lower picture, and then, by means of compressed air passing through the perforations, the mechanism automatically casts the type, assembles it in words, and properly spaces it

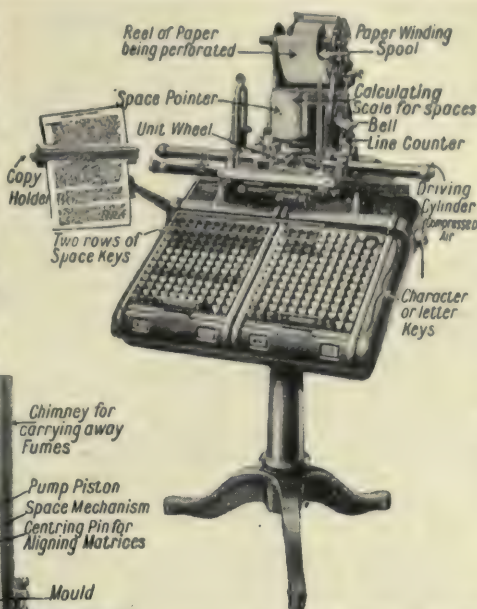
perforation and rewinding itself until the operator has finished his MS. The perforated reel is now detached and fitted into the casting mechanism, which begins to produce the type at the end of the copy and works back to the beginning. The reel is passed over a chamber or cylinder containing compressed air, along the face of which is a row of tiny pores leading to an equal number of miniature pipes.

As the reel travels over the

that the matrix of any particular letter is held for the fraction of a second over a mould into which molten metal is injected. The



Monreale, Sicily. Facade of 12th century cathedral



single letter of type thus cast is automatically ejected from the mould; the next following dies of the word being brought by the actions above described to the mould, one after another with lightning rapidity, until the whole line, evenly spaced, is completed. One keyboard operator can do the work of five hand compositors.

The whole of the text in this Encyclopedia was set up by the monotype. The 25 machines in use by the Amalgamated Press, in 1921 produced approximately 7,500,000 characters,

or about 1,500,000 words a week. See Compositor; Forme; Intertype; Linotype; Newspaper; Printing.

A. B. Blayney

Monovar. Town of Spain, in the prov. of Alicante. It stands on the river Elda, 23 m. by rly. N.W. of Alicante. Brandy is distilled, and textiles, leather, and soap manufactured. Pop. 11,200.

Monreale. City of Sicily, in the prov. of Palermo. It stands on the slopes of Monte Caputo, 5 m. by tram and rly. S.W. of Palermo. It grew up round a monastery whose church, founded in 1174 by William II, was made, in 1182, the metropolitan cathedral of Sicily. There is considerable trade in wheat, olive oil, and fruit. Pop. 23,600.

Monro, Sir Charles Carmichael (b. 1860). British soldier. Born June 15, 1860, he entered the West Surrey Regiment in 1879. He was in charge of the London division of Territorials, 1912-14, and when the Great War began he took the 2nd Division to the front. In 1915 he was given command of the 1st Corps, and when the Third Army was formed was placed at its head. Soon afterwards, sent to report on the position in Gallipoli, he succeeded Sir Ian Hamilton as commander-in-chief and superintended the evacuation. Returning to the western front early in 1916, he took



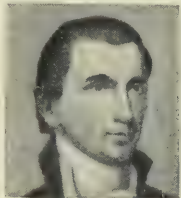
Sir C. C. Monro, British soldier

command of the First Army, but later in the year was sent to India as commander-in-chief, which post he resigned in 1920. In 1915 Monroe was knighted, in 1917 was made a general, and a baronet in 1921. He became governor of Gibraltar, 1923

Monroe. City of Louisiana, U.S.A. On the Ouachita river, 73 m. W. of Vicksburg, it is served by the Vicksburg, Shreveport, and Pacific and other rlys. It is the head of steamboat navigation on the river. It manufactures cotton goods, cotton-seed oil, lumber, and bricks. Settled in 1785, Monroe was incorporated in 1820, and became a city in 1871. Pop. 12,700.

Monroe. City of Michigan, U.S.A., the co. seat of Monroe co. On the river Raisin, 34 m. S. by W. of Detroit, it is served by the Lake Shore and Michigan Southern and other rlys. Situated near Lake Erie, it is a summer resort. It has flour and paper mills, agricultural implement factories, and canneries, and trades in cereals and fruit. Settled in 1783, Monroe was incorporated in 1827, and became a city in 1836. In an engagement here, Jan. 22, 1813, known as the battle of the river Raisin, the British defeated the Americans. Pop. 11,600.

Monroe, JAMES (1758-1831). American statesman. Born in Virginia, April 28, 1758, he fought in the War of Independence. In 1782, owing largely to the influence of his friend, Thomas Jefferson, he entered the legislature of Virginia, and was a member of that state's



James Monroe,
American statesman

executive council, and also of the Congress of the confederation. In the latter assembly he specially interested himself in questions affecting the future of the west. He objected to the revised constitution of 1787, ranging himself with the Anti-Federalists, but after it was accepted he entered the Senate in 1790, where he joined the party hostile to Washington.

In 1794 Monroe went to France as minister, but after some indiscreet remarks was recalled two years later. From 1799 to 1802 he was governor of Virginia, after which he went to France and Spain to endeavour to bring about the purchase of Louisiana and Florida only accomplishing the former purpose. From 1803-7 he was minister to Britain, in addition to discharging his special duties. In 1811 Monroe became again governor of

Virginia, and in 1812 secretary of state under Madison, being also secretary of war during the latter part of the war with Britain. In 1816 he was elected president against Rufus King, and he filled the office for two terms, or eight years. His rule is known everywhere for his enunciation, in 1823, of the Monroe Doctrine; in the States itself it was a period of great material prosperity and little internal strife. Florida at last was bought and the Missouri Compromise effected. He died at New York, July 4, 1831. See Life. D. C. Gilman, 1909.

Monroe Doctrine. Principle of international policy held by the U.S.A., the root idea of which is America for the Americans. The doctrine was first formulated in a message to Congress by President Monroe in 1823, the two essential points being the following: (1) "The American Continents . . . are henceforth not to be considered as subjects for future colonisation by any European power." (2) "We should consider any attempt on their part to extend their system to any portion of this hemisphere as dangerous to our peace and safety." The doctrine was reaffirmed by Polk in 1845 and 1848, while the protests of the U.S.A. against the interference of the French in Mexico in 1866, and against the claims of Great Britain in the Venezuela Boundary dispute in 1895, were based upon it. The doctrine does not seek to prevent European powers from enforcing just claims under international law, as when the British and German fleets combined to blockade Venezuela in 1903, but both countries previously gave an undertaking that they had no ulterior political object. Britain on the whole has supported the doctrine, making as it does for the security of Canada and other British possessions in the American continent. See International Law.

Monrovia. Capital of the republic of Liberia, W. Africa. It is situated upon the sea-coast, and is a port of entry with a trade in palm nuts and dye woods. Pop. (with Krutown) 6,000.

Mons (Flemish, *Bergen*). Town of Belgium, capital of the prov. of Hainault. It stands on the river Trouille, 38 m. by rly. S.W. of Brussels, occupying a hill (whence its name) in the important coal-mining district known as the Borinage. A rly. centre of note, it is



Mons arm:

the terminus of the busy Mons-Condé Canal. Apart from its importance as an administrative centre, Mons is a centre of the local trade and has various industries, e.g. textiles, lace, oils, soap, and sugar, and is a military centre with large barracks. There is a school of mining. The Gothic church of S. Waudru, begun about the middle of the 15th century, has a fine interior with 16th century stained glass. The town hall, begun in 1458, is on the Grande Place, and has an ornate façade.

Mons, believed to have been originally a Roman fortress, grew in the 8th century round a monastery founded by S. Waudru, or Waltrudis, a daughter of one of the counts of Hainault. It was in the possession of these counts, and of Spain, France, and Austria successively. It has stood many sieges, having been captured by Louis of Orange in 1572; by Louis XIV, 1691 and 1701; by Prince Eugene, 1709; by Saxe, 1746; and by Dumouriez, 1792. It was the capital of the French



Mons, Belgium. The 15th century
Town Hall

dept. of Jemappes from 1794-1814, after which it became part of the Netherlands. Its fortifications were finally demolished in 1862. Round the town was fought the famous battle of Aug., 1914, and it formed an important military centre for the Germans during their occupation of Belgium. It was recaptured by Canadian troops, Nov. 11, 1918. Pop. 27,400.

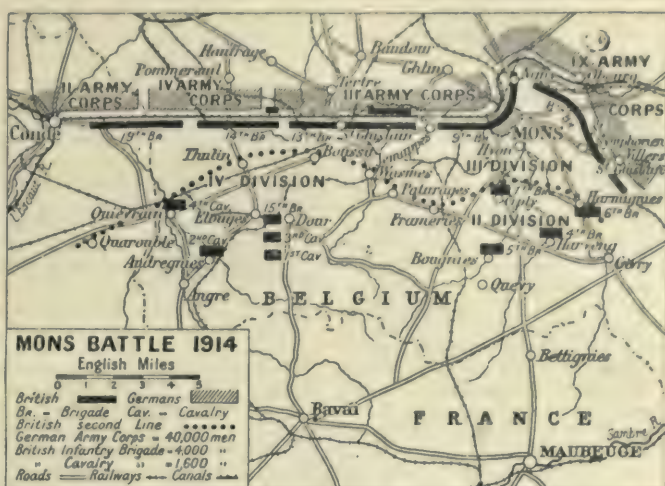
Mons, BATTLE OF. On Aug. 22, 1914, the British expeditionary force of 65,000 men and 250 guns, under Sir J. French, reached a front which ran from a point E. of Mons to Condé. The general idea of the French staff was that

this force, in cooperation with Lanrezac's 5th French army on its right, and with French territorial troops on its left, should attack and, if possible, envelop the German right (Kluck's 1st army). British cavalry covering the advance reached Soignies (10 m. N.E. of Mons), and at Villers-St-Ghislain inflicted heavy loss on a small German cavalry detachment.

As French motored to Lanrezac's headquarters early on the 22nd he says he saw large numbers of French troops moving S. in retreat. His intelligence dept. that evening estimated that at least three German corps were marching against the British, carrying out a wide turning movement. He took up a position which was held by the 2nd corps along the canal from Condé to Mons, and thence, after following a dangerously exposed loop in the canal, turned S. to Harmignies, so that his right flank (where the 1st corps was posted) was at right angles to the rest of his front. His position was chosen rather for attack than for defence, and in case a defensive battle had to be fought, he intended to fall back to a line a little farther south.

The French troops who should have prolonged the British left had not arrived, and the left was in the air; by the night of the 22nd the Germans were near Tournay threatening that flank; they also drove back the British cavalry and penetrated between the British right and Lanrezac's left at Anderlues. They attacked Lanrezac with such violence and superiority of force, threatening his communications from S.E., that his position was untenable.

The British troops were ordered to entrench and stand on the defensive until French progress in other directions gave the signal for a general advance. At daybreak of Aug. 23, German artillery began to shell the exposed loop on the canal N.E. of Mons; at 8 a.m. German infantry advanced in this quarter, violently assailed Nimy bridge, and developed a turning movement against the British right. Soon after midday a very large force of German guns was in action. The 9th German corps began to force back the right of the British 2nd corps, E. of Mons, and Smith-Dorrien, commanding that corps, withdrew from the canal loop, blowing up the bridges over the canal. At other points along the canal the Germans attacked in force, but suffered heavily; the 12th Brandenburg Grenadiers of the 3rd corps were roughly handled and appear to have lost a large part of their strength. So



Mons. Map showing the general disposition of the opposing armies and the British first and second lines

vigorous was the British fire that the Germans reported they had been opposed by masses of machine guns. At Jemappes bridge the fighting was particularly furious; the bridge was blown up by the gallantry of a corporal who worked 90 minutes under fire.

Early in the afternoon both British flanks were threatened by greatly superior German forces. At 5 p.m. Sir J. French was informed by Gen. Joffre that at least 4 German corps (160,000 men) were attacking him or turning him, and that the French 5th army was in retreat. French ordered an immediate retirement of the British to his second position, which had been prepared a little to the S. The British troops had punished the Germans badly and had fought superbly; but by nightfall the Germans had bridged the canal and were advancing in great strength. Sharp fighting went

on about them for many hours, but not until dawn were the British ordered to retreat.

At Frameries the British rearguard put up so good a defence that it compelled the Germans to carry out a formal attack in which at least nine battalions of the 6th German division were engaged and suffered heavy loss. The British 3rd division played the chief part in this rearguard action. The extrication of two British corps from the enveloping attack of four German corps (with a fifth in reserve) was a remarkable feat—all the more remarkable as the Germans were amply supplied with motor transport, which at this date the British force lacked, and with aircraft.

The battle of Mons was not fought to a finish, but it illustrated the German superiority in heavy artillery (especially 6-in. howitzers), and the fine quality of the British troops. The British loss may be provisionally estimated at 4,000 or 5,000; the German at double that figure.

The 1914 Star, given for services in France and Belgium between Aug. 5 and Nov. 22-23, 1914, is popularly known as the Mons Star. See Medal.

H. W. Wilson
Bibliography. The Retreat from Mons, H. W. C. Davis, 1914; 1914, Viscount French, 1919; The March on Paris, H. R. G. von Kluck, 1920; Forty Days in 1914, F. B. Maurice, 2nd ed. 1920.

MONSERRAT OR MONTSERRAT. Mountain and monastery of Spain, in the prov. of Barcelona. Near the right bank of the Llobregat, it is 21 m. direct N.W. of Barcelona. A remarkable serrated mountain mass (Lat. *mons serratus*), its highest point, Turó de



Monserat, Spain. West side of the mountain monastery

San Jerónimo, reaches an alt. of 4,070 ft. The Montsagrát of the Catalans and the Monsalvat of the Middle Ages, on the sacred, or sawn mountain, a monastery was founded in the 8th century. Its chapel contained an alleged miracle-working image of the Virgin Mary, which attracted thousands of pilgrims annually, and the monastery became one of the richest and most celebrated in Spain. In the Napoleonic Wars the French sacked the monastery (1811), and it suffered again severely in the Carlist rising of 1827. It is now in ruins. The more modern buildings date from 1560.

Monsieur Beaucaire. Romantic comedy. Based by Mrs. E. G. Sutherland and Booth Tarkington on the latter's novel of the same name, it was produced, Oct. 25, 1902, at the Comedy Theatre, London, where it ran for 430 performances. Louis d'Orleans, son of the Regent, comes to Bath disguised as a barber, and, although handicapped, wins the love of the reigning toast, Lady Mary Carlisle. Lewis Waller played Beaucaire, and Grace Lane Lady Mary. It was revived in 1919.

Monsieur de Pourceaugnac. Farce comic-ballet in three acts by Molière, produced at Chambord, Oct. 6, 1669, the author acting the title-rôle, and Lulli supplying the music. The scene is in Paris. Pourceaugnac is a middle-aged rustic, between whom and Julie, the daughter of Oronte, the last named has arranged a marriage. The humour turns on the devices adopted by Julie's lover Eraste to drive Pourceaugnac back to Limoges.

Monsignore (Ital., my lord). Title of honour bestowed by the pope on prelates and high officials of the papal household.

Monson, BARON. British title borne since 1728 by the family of Monson. The Monsons were settled in Lincolnshire in the 14th century, and several of them were prominent in public affairs. Sir Thomas Monson, M.P. for Lincolnshire and falconer to James I, was made a baronet in 1611. In 1728 Sir John, the 5th baronet, was made a baron, and the title passed from one descendant to another until it came to William John, the 7th baron. An official at the court of Queen Victoria and of the House of Lords, he was made Viscount Oxenbridge in 1886. The viscounty, however, became extinct when he died, April 16, 1898, but the barony passed to his brother. In 1900, Augustus Debonnaire (b. 1868) became the 9th baron. The family seat is Burton Hall, Lincoln.

Monson, SIR EDMUND JOHN (1834-1909). British diplomatist. Born at Chart Lodge, Kent, Oct.



Sir E. J. Monson,
British diplomatist
Elliott & Fry

6, 1834, a younger son of the 6th Baron Monson, he was educated at Eton and Balliol College Oxford. He entered the diplomatic service, being attaché at Paris, Florence, Hanover, and Brussels. He was in retirement from 1865-69, when he was appointed consul to the Azores. Consul-general for Hungary in 1871; he was commissioned for special service during the Turkish War, 1876-77, and in 1879 became minister-resident to Uruguay. After that he successively represented Great Britain in Argentina, Denmark, Greece, and Belgium. Appointed ambassador to Austria-Hungary in 1893, he was transferred to Paris in 1896, where he remained until 1904. Knighted in 1886, and made a baronet in 1905, he died Oct. 28, 1909.

Monsoon (Ital. *monsone*; Arab. *mausim*, season). Name of a rain-bearing wind which blows over the Indian Ocean from May to Sept. In the latitude of the Arabian Sea and the Bay of Bengal the normal wind is the N.E. trade, but in these regions the N.E. trade blows only during the cool season. When the sun is overhead in N. latitudes a barometric depression develops in N.W. India, with the result that the S.E. trade blows across the equator, and then continues as a S.W. wind to reach India and circle round this centre of low pressure, so that storms from the Bay of Bengal pass up the Ganges valley from the S.E.

The early seafarers in these waters, the Arabs, depended upon these winds, and the first Europeans who traded with India regulated their voyages by them. Modern navigators are instructed by the pilot charts to vary the route they follow in accordance with the monsoon. Similar reversals of the normal oceanic wind occur elsewhere.

Most of India receives from 60 to 90 p.c. of the total annual rainfall during the period of the monsoon; the fall at a given place varies from year to year, and the comparative failure of the periodical downpour means famine and plague; the important economic event annually for the Indian

peasant is the "bursting" of the heavy clouds which the wind rolls over India from the Arabian Sea. The term monsoon has gained a technical significance as descriptive of the special type of summer rainfall, when very nearly the whole of the annual precipitation occurs during the three midsummer months. See Wind.

Monster. Word used in a number of senses. Commonly a monster is any huge animal, especially an extinct animal, e.g. prehistoric monsters as the dinosaurs, ichthyosaurs, mammoths, etc. It is also used in a somewhat similar sense in connexion with such fabulous creatures as mermaids, dragons, and the like. In general, anything abnormally big is called a monster, as a monster potato.

The word is also used in the sense of monstrosity, i.e. anything ugly, abnormal, or deformed, and includes freaks as the Siamese twins, two-headed men, etc. See Dinosaur; Mammoth.

Monstera deliciosa. Perennial climber of the natural order Araceae, a native of tropical America.



monstera deliciosa. Foliage and stems of the American climber

The large, leathery, stalked leaves are heart-shaped, but, as they develop, the upper ones have part of their substance absorbed, so that their margins become lobed, and the more central areas have large perforations. The object of this extraordinary development appears to be to allow light to penetrate to the lower-growing parts of the plant. The large inflorescence is, like that of the Calla, surrounded by a hood (spathe). The flowers are succeeded by a spike of berries, but are so crowded that they become six-sided at the surface, and within amalgamated into a fleshy, edible body like a banana, with the flavour of pineapple.

Monstrance (Lat. *monstrare*, to show). Sacred vessel of the R.C. Church, in which the Host is presented for adoration, carried in procession, and used in Benediction.



Monstrance,
Gothic pattern

enced by Mantegna and Giovanni Bellini. His earliest known picture still extant is *The Virgin and Child*, 1487, at Bergamo. His *Madonna and Child*, in the National Gallery, was formerly ascribed to Bellini. Other important paintings are the *San Michele* altar-piece, 1499, *The Presentation in the Temple*, and frescoes at Vicenza. At Verona he painted the frescoes in the chapel of S. Biagio. He died at Vicenza, Oct. 11, 1523.

Montagnana. City of Italy, in the prov. of Padua. It stands on the river Frassina, 22 m. direct S.W. of Padua. Surrounded by old walls with medieval towers, it has a late Gothic cathedral with Renaissance choir, and the Palazzo Pisano, the work of Palladio. There is a fine collection of paintings in the cathedral. Cotton, woollen, silk, and hempen goods are manufactured. Pop. 11,200.

Montagnards. Name given to members of the party, often called the Mountain (*q.v.*), formed during the French Revolution.

Montagu. British battleship. She ran ashore upon Shutterpoint, Lundy Island, during a thick fog, May 30, 1906, and became a total wreck. She was 405 ft. long, 75½ ft. in beam, displaced 14,000 tons, and had engines of 18,285 h.p., giving a speed of 18½ knots. She was protected by armour varying from 14 ins. to 11 ins. in thickness, carried four 12-inch, twelve 6-inch, and twenty smaller guns, with four torpedo tubes.

Montagu, EDWIN SAMUEL (1879-1924) British politician. A son of Lord Swaythling, a Jewish banker, he was educated at the City of London School and Trinity

College, Cambridge. He secured a Liberal seat in Cambridgeshire in 1906, and was for four years Asquith's private secretary. He was under-secretary for India from 1910-14, and financial secretary to the Treasury, 1914-16. In 1915 he was chancellor of the duchy of Lancaster, and succeeded Lloyd George in 1916 as minister of munitions. He left office with Asquith in Dec., 1916, but soon returned, this time as secretary for India, in which capacity he visited that country in 1917-18 in connexion with the suggested scheme of constitutional reforms. In 1919 he successfully piloted the Government of India Bill, and resigned in Mar. 1922. He died Nov. 15, 1924.

Montagu, ELIZABETH (1720-1800). English writer. Daughter of Matthew Robinson, she was born at York, Oct. 2, 1720. In 1742 she married Edward Montagu, a wealthy son of the earl of Sandwich, and from about 1750 onwards her salons, first in Hill Street, later at Montagu House, Portman Square, were centres of social-intellectual life in London. Among those who frequented them were Samuel Johnson, Burke, Garrick, and Reynolds. An occasional writer, she made a spirited reply to Voltaire in her *Essay on the Writings and Genius of Shakespeare*, 1769. She died at Montagu House, Aug. 25, 1800. Her May-day dinners to London chimney-sweepers were celebrated. See *Bluestocking*; consult also her letters, pub. 1809-13, new ed., E. J. Climençon, 1906.

MONTAGU, LADY MARY WORTLEY (1689-1762). English poet and letter writer. A daughter of the duke of Kingston, she was born at Thoresby, Nottinghamshire, and her father gave her a sound and comprehensive education. In 1712 she married Edward Wortley Montagu (d. 1761), and on his appointment as ambassador at Constantinople in 1716 accompanied him there, already recognized as one of the most beautiful and the most accomplished woman of her time, and a great linguist. On the return of the Montagus to England



E. S. Montagu,
British politician

they were persuaded by Pope to settle at Twickenham, but the friendship between Lady Mary and the poet gradually cooled, and ultimately ended in a quarrel, in which Pope behaved disgracefully. From 1739-61 ill-health compelled Lady Mary to live in Italy. She died in England, Aug. 21, 1762. Her gift for satirical verse was shown in her *Town Eclogues*, 1716, but it is as a letter writer that she excels. Her *Letters*, written during travels in Europe, Asia, and Africa, were first published in 1777. See *Lady Mary Wortley Montagu* and *Her Times*, G. Paston, 1907.

MONTAGU OF BEAULIEU, JOHN WALTER EDWARD DOUGLAS-SCOTT-MONTAGU, 2ND BARON (b. 1866).



2nd Baron Montagu
of Beaulieu
Russell

Born June 10, 1866, and educated at Eton and New College, Oxford, he was Conservative M.P. for the New Forest div. of Hants, 1892-1905, when he succeeded to the peerage. A great sportsman and traveller, he represented *The Times* during the Matabele War. He became known as an expert on motoring, aviation, and all transport questions, being vice-president of the Royal Automobile Club and a member of the Road Board. He was the founder and editor of *The Car*, and wrote the article *Motor Car* for this *Encyclopædia*. From 1915-19 he was adviser on mechanical transport to the Indian government, being made C.S.I., 1916, and K.C.I.E., 1919.

Montague. Anglicised form of the name of one of the rival families of Verona (*Montecchi*), whose quarrels form the story on which Shakespeare based his *Romeo and Juliet* (*q.v.*). In the play it is represented by Montague, head of the house, Lady Montague, their son Romeo, and their nephew Benvolio.

Montagu House. Name of several London residences. The French Renaissance building in Whitehall Gardens was, until Jan., 1917, the town residence of the duke of Buccleuch. It was built by William Burn, 1858-60, at a cost of £100,000, on the site of an earlier Montagu House, erected



Lady Mary Montagu

in 1731-34 for the 2nd duke of Montagu, from whose family it passed by marriage to the Buccleuchs in 1767. Practically all the materials of the original structure were ground down into concrete for the foundations of its successor, which in Dec., 1916, was commandeered by the government.

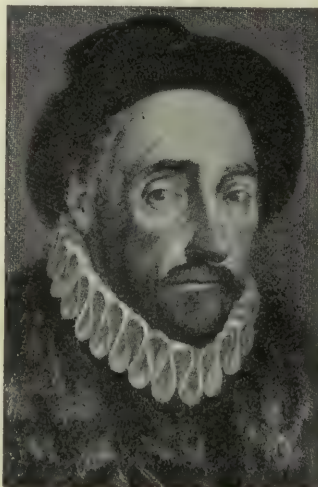
Another Montagu House, now 22, Portman Square, W., and town residence of Viscount Portman, was designed by James Stuart for Elizabeth Montagu (*q.v.*), who held her literary salons here. It was built about 1775-81. A fourth house of this name was built in Bloomsbury by Robert Hooke in 1675-79 for Ralph, 3rd baron, and later 1st duke of Montagu. Destroyed by fire in 1686, it was rebuilt by Puget. When the 2nd duke built a new house at Whitehall, the Bloomsbury structure came into the hands of Lord Halifax, who sold it to the government in 1754 for £10,250. Its site is now occupied by the British Museum (*q.v.*). See History of the Squares of London, 1907; and Private Palaces of London, 1908, E. B. Chancellor.

Montagu Square. London square. Between Upper George Street and Montagu Place, W., on the Portman estate, it was named after Elizabeth Montagu (*q.v.*). Built 1800-13, on ground once called Ward's Field, the site of Apple Village, its residents have included the mother of the 1st Baron Lytton, Anthony Trollope, and Sir Frederick Pollock.

Montaigne, MICHEL D'EYQUEM, SIEUR DE (1533-92). French essayist. He was born Feb. 28, 1533, at the Château de Montaigne, near Bordeaux, in Périgord, a property bought by his great-grandfather, Raymond Eyquem. Montaigne thought the Eyquems intermarried with English residents in Guienne in the time of the Plantagenets. His great-grandfather and grandfather were merchants and exporters of wine, woad, and dried fish; hence the gibe of Joseph Scaliger that Montaigne was the son of a herring-monger. The essayist's father, Pierre d'Eyquem, followed Francis I to Italy and returned to Bordeaux when 33 to marry, take up the duties of alderman and mayor, carry on business as a wine-seller, rebuild the château, and help to found the college of Guienne. Pierre married Antoinette de Lopes, a lady of Jewish blood. Michel was their third son, and one of his brothers and two of his sisters were Protestants.

In accord with his father's views on education, Michel was put out to nurse with a peasant woman,

taught Latin by tutors who knew no French, and early encouraged to read Virgil, Ovid, Terence, and Plautus. He was sent to the college of Guienne, where George Buchanan was one of his teachers, and studied law, probably at Toulouse. He became a magistrate and attended the court of Francis II. His friendship, 1557-63, with Étienne de la Boétie, a young republican thinker, with whom he thought to seek a new home on the other side of the Atlantic, had a lasting effect on his character.



Montaigne

From a contemporary portrait

La Boétie left Montaigne his library, and appointed him his literary executor. Shortly after his marriage to Françoise de la Chassaigne, by whom he had five children, four of whom died in infancy, only a daughter surviving. Montaigne succeeded to the family estate, was made a knight of the order of S. Michael, and, giving up his magistracy, designed to live in retirement, for which purpose he built the famous tower containing his study. But he served as gentleman of the chamber to Henry III and Henry of Navarre, and had some experience of a military life.

A sufferer from stone, he sought recovery by a visit to the baths of Lucca, and in 1580-81 travelled to Italy by way of Switzerland and Germany, chiefly on horseback. In March, 1581, he was made a Roman citizen. Recalled from travel by his election as mayor of Bordeaux, he was re-elected and retained office until 1585. During a visit to Paris in 1588 he met Mlle. Marie le Jars de Gournay, a lady of noble family and some learning, who became his literary executrix.

During his later years he formed a friendship with Anthony Bacon, brother of Francis, and Pierre Charron. He died of quinsy, Sept. 13, 1592, receiving the last offices of the Church. His remains, buried near the château, and removed a few months later to the conventual church of S. Antoine, were, in March, 1886, reinterred in the new university buildings at Bordeaux.

Montaigne's first literary work was a translation, for his father, of the *Theologia Naturalis* of Raimond Sebond, 1568; it served as the text of one of his essays, the first two books of which appeared in 1580; a second edition came out in 1582, a third in 1587, and a fourth, with book 3, in 1588. Of two copies of the 1588 issue, annotated by Montaigne, one provided the material for that brought out by Marie de Gournay in 1595. Montaigne's *Journal de Voyage*, written in part by a secretary and in part by himself, was discovered in MS. at the Château de Montaigne in 1769-70 and, edited by M. de Querlon, was first printed in 1774. He had gone to Paris in 1570 to superintend the printing of the works of La Boétie.

Montaigne lived in an age distracted by religious strife and political upheaval. He, for the most part, maintained the position of onlooker; in religion a formal adherent of the Church, at heart religious without superstition, tolerant without impiety. In civil strife he sought also to avoid extremes. His standpoint was one of provisional doubt; his attitude to all knowledge was *Que sais-je?* (What know I?). To him the quest of truth was more engaging than its possession; the greatest virtue was sincerity. Cicero, Plutarch, Seneca, Diogenes Laërtius, Horace, Plato, Virgil, and Lucretius are the authors most frequently quoted by him. The first of essayists in point of time, a prince of egoists who veils his personality and is apt to hide his serious thought in his self-portraiture, he was a founder of modern criticism, and has exerted much influence on his successors. As a writer he displays wit and a happy humour even when, as in his travel journal, writing in physical pain. In his private life he was a devoted son, and as husband and father was more devoted than his philosophy would seem at first sight to allow.

W. F. Aitken

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1845, 1865, and W. C. Hazlitt, 1889, 1902. See also Representative Men, R. W. Emerson, 1850; Montaigne, W. L. Collins, 1879; M. de M., M. E. Lowndes, 1898; Journal of M.'s Travels, trans. by W. G. Waters, 1903; Early Writings, Studies in, and Influence of M., Grace Norton, 1904 and 1908; Literary Portraits, C. Whibley, 1904; M. de M., E. Dowden, 1905; M., a Study, R. W. Bond, 1906; Montaigne and Shakespeare, J. M. Robertson, 1909; M. de M., Edith Siebel, 1911; the essays of Sainte-Beuve, and The Times, Sept. 3, 1892.

Montalembert, CHARLES FORBES DE TRYON, COMTE DE (1810-70).

French politician and man of letters. Born in London, son of an émigré of noble family, he returned to France on the Restoration, and became known as the founder, with Lamennais (*q.v.*), of the journal



Comte de Montalembert, French politician

L'Avenir, 1830, and a champion of the cause of religious liberty. He died in Paris, March 13, 1870. His numerous writings include Vie de S. Elisabeth de Hongrie, 1836 (Eng. trans. 1904); Des Intérêts Catholiques au XIX^e Siècle, 1852; Les Moines d'Occident depuis S. Benoît jusqu'à S. Bernard, Eng. trans. 1896.

Montalembert, MARC RENÉ, MARQUIS DE (1714-1800): French writer on fortifications. Born at Angoulême,

Charente, July 16, 1714, he entered the army in 1732, and saw active service in Germany, Italy, and Bohemia. He was elected a member of the French



Marquis de Montalembert, French writer

Academy of Sciences, and in 1776-86 published La Fortification Perpendiculaire. His theories, on which was founded the system of polygonal defence, were first adopted by Prussia. He died in Paris, March 29, 1800. See Vauban, Montalembert, Carnot: Engineer Studies, E. M. Lloyd, 1887.

Montana. State of the U.S.A. The W. portion is traversed by the Rocky Mts., whence the surface descends E. to a rolling plain, interspersed with valleys; alt. ranges from 2,000 ft. in the E. to 5,000 ft. at the base of the Rockies. The head-waters of the Missouri and Columbia rivers take their rise in Montana, and the Yellowstone,

Milk, and other Missouri affluents help to drain the state. Agriculture, except in the valleys, largely depends on irrigation, wheat, oats, barley, and other crops being extensively cultivated; stock-rearing is a valuable occupation. The mineral resources, especially copper, are the greatest asset of the state. Coal, lead, and silver are the most important of the other minerals. There is a state university at Missoula and 4,450 m. of rlys. Two senators and two representatives are sent to Congress. It was admitted to the Union in 1889. Female suffrage was adopted in 1914. Helena is its capital. Area, 147,182 sq. m.; pop. 548,900.

Montanism. Christian heresy which arose in Phrygia in the 2nd century under the teaching of Montanus. He claimed to be specially inspired by the Holy Spirit, and, together with two women, to be endowed with power to make known special revelations to the Church. His main teachings were, that mortal sin may be pardoned by God, but cannot be forgiven by the Church; that second marriages are unlawful for Christians; that all Christians should lead ascetic lives; that no Christian should avoid or flee from persecution. Montanus became more or less identified by his more ignorant followers with the Holy Spirit Himself, and his later followers baptized converts in the name of the Father, the Son, and Montanus. The heresy was condemned by the council of Constantinople in 381.

Montargis. Town of France, in the dept. of Loiret. It stands on the river Loing, here met by the Vernisson, 47 m. by rly. E. of Orléans. It is a rly. junction, and, as the meeting-place of the three canals of the Loing, Orléans, and Briare, is an important trade centre. In the 14th century Aubrey de Montdidier was murdered in the forest near this town by Robert Macaire. His dog hunted down the murderer, and Charles V ordered Macaire to fight the animal, which dragged him down and thus made him confess. Pop. 13,000.

Montauban. Village of France, in the dept. of Somme. It is 4 m. E. of Albert, and was prominent in the Great War. It was captured by the 17th Manchesters (30th div.) on July 1, 1916. Retaken by the Germans in March, 1918, it was



Montauban, Tarn-et-Garonne, France. View of the river Tarn, where it flows through the town

finally recovered by the British in Aug. See Bapaume, Battle of; Somme, Battles of the.

Montauban, in the dept. of Tarn-et-Garonne, is a noted Protestant centre. It carries on a trade in agricultural produce, oil, and wine. Pop. 29,800.

Montbéliard. Town of France, in the dept. of Doubs. It lies 11 m. by rly. S.S.W. of Belfort, at the meeting of the Allaine and the Lisaine, and on the Rhône-Rhine canal. Clock- and watch-making and cotton-spinning are carried on. The town was the capital of a county which, as Mömpelgard, formed part of Württemberg, 1397-1793. Pop. 10,600.

Mont Blanc (Fr., white mountain). Loftiest peak of the Alps, on the Franco-Italian frontier, in Haute Savoie and Piedmont. The summit, which is in France, reaches an alt. of 15,781 ft. The main mass runs N.E. between the Little and Great St. Bernard Mts., and the principal peaks are the Dôme du Goûter (14,210 ft.), Aiguille du Midi (12,608 ft.), Grandes Jorasses (13,797 ft.), Aiguille Verte (13,540 ft.), Aiguille du Dru (12,320 ft.), and that of Argentière (12,820 ft.). It is mainly composed of granitic rock, and great glaciers stretch down it. The limit of the snow-line is about 8,500 ft. alt.

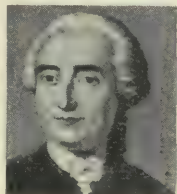
Mont Blanc was first ascended on Aug. 8, 1786, by Dr. Paccard and his guide, Balmat. It is now easily accessible from Chamonix (*q.v.*), and ascents are made nearly every day during the summer season. The principal passes are the Col de la Brenva (14,216 ft.), the Col du Géant (11,060 ft.), and the Col d'Argentière (11,537 ft.). On Nov. 23, 1920, the vast ice cap on its summit slipped from its place, carrying with it a huge block of the limestone peak. In July, 1921, a Swiss airman landed on the Dôme du Goûter and ascended from it. See Aiguille Verte; Alps; Crevasse; Glacier; Mer de Glace; Mountaineering; consult also The Chain of Mont Blanc, L. Kurz, Eng. trans. W. A. B. Coolidge, 1892.

Mont Blanc. Ridge of France, in the dept. of Marne. It is about 1 m. N. of Somme Py and 10 m. N. of Suippes. It came into prominence in the later stages of the Great War, and was notable for its capture by U.S. troops in Oct., 1918.

After a heavy barrage the Americans assaulted the ridge early in the morning of Oct. 3, 1918. One body advanced through the woods on the N.W. and another on the N.E., but both were held up. Reorganized, the Americans pushed forward in desperate hand-to-hand fighting and carried the ridge. The Germans counter-attacked, but were unable to dislodge the Americans. For the next three days the struggle continued, but in the end the Americans were in possession of all their objectives on Oct. 6, after an advance of about 6 m.

Montbrison. Town of France, in the dept. of Loire. It lies on the Vizey, at the foot of the Mts. du Forez, 21 m. by rly. S.W. of St. Étienne. It manufactures ironmongery and has local trade in cereals. The Gothic church of Notre Dame de l'Espérance, built in the 13th-15th centuries, has a 14th century chapter house. Pop. 7,100.

Montcalm de St. Véran, Louis JOSEPH, MARQUIS DE (1712-59). French soldier. Born near Nîmes,



Feb. 29, 1712, he joined the army when quite young, and after seeing much service in Italy and Germany was appointed in 1756 to the command of the French

forces in Canada. In 1757 he took Fort William Henry from the British, and in 1758 successfully defended Fort Ticonderoga against a superior British army. Then the tide turned. The French lost Louisbourg and Fort Duquesne, and Montcalm was forced to retire to Quebec, and prepared to defend it against the British under Gen. Wolfe. The latter succeeded in leading an army of 5,000 men up to the Plains of Abraham, where on Sept. 13, 1759, the French joined battle and were defeated. Wolfe was killed during the engagement and Montcalm was mortally wounded. See France and England in N. America, vol. 7, Montcalm and Wolfe, F. Parkman, new ed. 1906.

Montceau-les-Mines. Town of France, in the dept. of Saône-et-Loire. It lies in the busy industrial valley of the Bourbince, 14½ m. by rly. S. of Le Creusot, on a branch line from the Montchanin junction,

and is on the Canal du Centre. It has extensive coal mines and some granite quarries. Pop. 27,300.

Mont Cervin. Alternative name for the peak more commonly known as the Matterhorn (*q.v.*).

Montclair. Town of New Jersey, U.S.A., in Essex co. It stands on the Morris Canal, 5 m. N.N.W. of Newark, and is served by the Erie and the Lackawanna rlys. It is a residential district of New York and a summer resort. It manufactures paper and hosiery. At one time part of Newark and later of Bloomfield, Montclair was incorporated in 1868. Pop. 28,800.

Mont-de-Marsan. Town of France, capital of the dept. of Landes. It lies at the meeting of the rivers Midou and Douze, which form the Midouze, 40 m. by rly. N.E. of Dax, and is a rly. junction of note. Its chief industries are in oils, quarrying, and cork-making, and there is trade in resin, timber, and wines. There are ruins of a 14th century castle. Pop. 12,100.

Mont de Piété. French national pawnbroking establishment. Founded in Paris, 1777, by royal ordinance, the original mont de piété started with a monopoly, and made large profits until its privileges were abolished at the Revolution. Reopened in 1797 as a private concern, its monopoly was renewed by Napoleon I. The mont de piété differs from the English pawnshop in that it is a state undertaking which retains traces of its Italian origin, part of the profits going to the support of the poor. In Italy monti di pietà were established for the benefit of the poor in the middle of the 15th century, and thence spread over the continent of Europe. See Pawnbroker.

Mont des Cats OR MONT DES CHATS. Hill of France, in the dept. of Nord. It is 518 ft. in height and lies about midway between Poperinghe and Hazebrouck. During the Great War this height was of tactical importance as dominating the rly. between these towns vital for the British communications in the Ypres salient. It was taken by the British 2nd cavalry div. Oct. 13, 1914, and held against strong German counter-attacks. The modern Trappist monastery on the summit was much damaged by bombardment. See Ypres, Battles of.

Montdidier. Town of France. In the dept. of Somme, it stands on a hill near the river Don, 23 m. from Compiègne. Its buildings, which were almost destroyed during the Great War, include the church of S. Pierre, a 15th century building, the church of the Holy Sepulchre, a little more recent, and

the palais de justice. An important rly. junction, its industries included tanning, printing, distilling, and the making of candles. The town existed in the time of the Frankish kings, and in the Middle Ages had its own counts. A fortified place, it was captured by the English in 1523. In 1814 it was occupied by the Cossacks, and in 1870 by the Prussians.

Montdidier was captured by the Germans in their offensive in the St. Quentin sector, March, 1918. After a stubborn resistance by the Allies, the Germans fought their way into the town on March 27. On June 9 they launched an offensive on the Montdidier-Noyon line which was defeated by the French.

The recapture of Montdidier by the French took place on Aug. 10, 1918. After Haig's great victory of Aug. 8, which threatened the envelopment of the place from the N., Humbert, with the 3rd French army, suddenly attacked on Aug. 9, from the S. and S.E. The Germans precipitately began to withdraw, but part of their force in Montdidier was cut off and captured. See Somme, Battles of the.

Mont-Dore-les-Bains. Town of France, in the dept. of Puy-de-Dôme. At an alt. of over 3,400 ft. among the Monts Dore, on the river Dordogne, 48 m. by rly. S.W. of Clermont-Ferrand, it is on a branch line from Laqueuille. It is famed for its twelve mineral springs, which in summer attract large numbers of sufferers from pulmonary affections, rheumatism, etc. There are numerous hotels, a small casino, and a funicular rly. ascending the neighbouring Salon du Capucin, 4,085 ft. Pop. 1,200.

Mont d'Or Tunnel. Rly. tunnel on the Paris-Milan route. It shortens the journey between Frasne and Pontarlier by piercing Mont d'Or in the Jura range. It is 4 m. in length and contains a double track. Begun in 1910, the tunnel was opened in May, 1915.

Montebello. Town of Italy. In the prov. of Vicenza, it is 10 m. by rly. from its capital of the same name. In the vicinity the Austrians were twice defeated by the French in 1796.

Montebello. Village of Italy, in the prov. of Pavia. It is 5 m. by steam tramway E. of Voghera. It is famed for two battles, June 9, 1800, and May 20, 1859, in which the Austrians were defeated by the French and the Franco-Sardinians respectively. Pop. 2,200.

Monte Carlo. Town of the principality of Monaco. It lies on the N. shore of the Bay of Monaco, adjoining the town of Monaco itself, and 150 m. by rly. E.N.E. of



Monte Carlo, Monaco. The casino, containing the famous gaming rooms

Marseilles. One of the most frequented resorts of the Riviera, it has an excellent climate, and is noted for the gaming rooms in its large casino, which, built in 1878, and adorned with beautiful statuary and paintings, contains also theatre, reading room, etc. Roulette and trente-et-quarante are the chief games played. Besides numerous hotels, the town has a large palais des beaux-arts. A rly. runs to La Turbie, a mt. village 2 m. to the N.W. Pop. 9,600. See Casino; Monaco.

Monte Cassino. Monastery near Cassino, Italy. Situated on a hill, 1,703 ft. high, about 45 m. N.W. of Naples, it was founded by S. Benedict in 529, on the site of a temple of Apollo, and was the first monastery of the Benedictine order. Destroyed and rebuilt several times, the existing buildings, notable for their imposing size, arcaded courts and cloister, and great church, date from 1637-1727. Its golden days were in the 11th century under Abbot Desiderius, later Pope Victor III. Since 1886 a national monument, it is an educational centre of importance. The church is rich in marbles, mosaics, sculptures, paintings, and frescoes, and has beautifully carved choir stalls. The fine library contains more than 10,000 volumes, many rare MSS., including the 12th century work by Alberic which is said to have suggested to Dante the central idea of his *Divina Commedia*, a collection of papal bulls, and other treasures. See *Storia della badia di Monte Cassino*, L. Tosti, 1842-43.

Montecatini. Health resort and spa of Italy, in the prov. of Lucca. It is 19 m. by rly. E. of Lucca. The warm mineral springs, in the Nievole Valley, have been in use since the 14th century, and are beneficial in abdominal complaints, scrofula, etc. Pop. 3,400. There is a village of this name in the prov. of Pisa, 24 m. E.S.E. of Leghorn. It is noted for its warm saline springs. In the vicinity are copper mines, worked since the 15th century.

Monte Cristo. Small island of the Tuscan Archipelago, N.W. Italy. It lies 26 m. S. of Elba, has

an area of 6 sq. m. and an alt. of 2,120 ft. It contains many springs, and the ruins of a monastery, destroyed by Corsairs in the 16th century. It is the ancient Oglasa.

Monte Cristo. COUNT OF. Romance by Alexandre Dumas the elder (assisted by A. Maquet), 1845. The hero is a Marseilles sailor, who afterwards becomes Count of Monte Cristo, and poses in various rôles during a succession of wonderful adventures. The story is perhaps the best of the many works of the great master of French romance.

Monte Croce. Pass in the Dolomite Alps, in Italy. It is a fine carriage road leading from Primiero in Tirol to Feltre in Belluno. Its alt. is 1,830 ft. It was the scene of fighting in the Great War between the Austrians and Italians in 1915. See Dolomites.

Montecuculi OR **MONTECUCCOLI**, RAIMONDO, COUNT OF (1609-80). Austrian soldier. Born Feb. 21,



Count of Montecuculi, Austrian soldier

1609, at Montecuculi, Italy, he belonged to an old noble family. About 1625 he entered the Austrian service and under his uncle, Count Ernst, soon saw fighting, his service being almost continuous throughout the Thirty Years' War. He was present at the battles between the Imperialists and the Swedes, including Lützen, where he was wounded, and save for a period during which he was a prisoner, he was in the field until the year of 1648, being then a general. In 1657-60 he had a command against the Swedes, but his reputation rests upon his campaigns against the Turks and the French, especially on his great victory over the former at St. Gotthard in 1664. Between 1672-75 he was commanding the Austrians against the French under Turenne, but after taking Philipsburg he retired. Made a prince and duke of Meli, he died Oct. 16, 1680. Montecuculi wrote a valuable work on war, and books on other subjects. His works were published at Milan in 1807.

Monte della Disgrazia (Ital., Mount of Misfortune). Mountain mass of Italy, in the prov. of Sondrio. It has an alt. of 12,065 ft., and lies N.W. of Sondrio and W. of the Val Malenco. See Alps.

Montefiascone (Ital., bottle mountain). City of Italy, in the prov. of Rome. It stands on a hill at an alt. of 2,010 ft. at the S.E. side of Lake Bolsena, with a rly. station 9 m. N. of Viterbo. The unfinished cathedral dates from 1519, and the church of S. Flaviano from 1032. The city is noted for its muscatel wine. Pop. 9,600.

Montefiore, SIR MOSES HAIM (1784-1885). Jewish philanthropist. The eldest son of a merchant,



Sir Moses Montefiore, Jewish philanthropist

Joseph Elias Montefiore, he was born at Leghorn, Oct. 24, 1784, but his early life was passed in London, where his family had settled. He became a stock broker and, related by marriage to the Rothschilds, soon made a fortune and retired from business. In 1837 he was sheriff of London, being made a knight, and in 1846 he became a baronet. A centenarian, and a strict Jew to the end, he died July 28, 1885. Montefiore's fame rests upon the work he did for the Jews throughout the world. He visited Palestine in their interests, also Turkey, Russia, and other countries, and his labours and charity relieved many of them from persecution and distress.

Montefrio. Town of Spain, in the prov. of Granada. It stands on the Bilano river 25 m. N.W. of Granada. It was a frontier fortress of the Moors, whose castle still stands. Alcohol, cotton, and soap are manufactured. Pop. 11,000.

Monte Grappa. BATTLES OF. Fought between the Italians and the Austro-Germans, 1917-18. The mountain which gives its name to this series of battles is the highest in a range between the valleys of the Brenta and the Piave, Italy. The first battle, fought Nov. 11-28, 1917, was a continuation of the battle of Caporetto (*q.v.*).

The Italian High Command at this time was apprehensive that the Austro-Germans would try to break through on the northern frontier, and strike in behind their line on the Piave. As soon as Below's troops were advancing W. from Saga into Carnia, the Italians were obliged to withdraw from Carnia and Cadore, and take up a line further S. As the

Upper Piave did not give good defensive positions, the new front was drawn from the Montello, on the middle Piave, then N. of the massif of Monte Grappa, to the Val Sugana, in the Trentino, where it joined up with the right of the first army N. of Asiago, on the W. side of the Brenta. By Nov. 11 the Italians were on this line from the Piave to the Brenta, and as the Austrians drove first at the Asiago region, some little time was obtained for consolidating it.

On Nov. 14 the enemy took Monte Tomatico, N.E. of Monte Grappa, and above Quero. On Nov. 15 he unsuccessfully attacked the Cornella height eight times, but the Italians, being outflanked, had to retire next day. On Nov. 17 the Austrians were attacking the positions on Monte Tomba, about 3 m. N.E. of Monte Grappa, and trying hard to turn them from the Piave. On Nov. 18 they made a great effort from Quero, which they had captured, and obtained a footing on the ridge. German picked troops were thrown into the battle, but the Italians retained most of their ground. On Nov. 22 the enemy captured the crest, but the Italians held on to the S. slopes, and, counter-attacking, once more gained possession of the mountain. Then their reserves came up, and the enemy was completely checked.

Meanwhile the Austrians had advanced on the N. and W., and on Nov. 21 attacked the ridge from Monte Grappa N.E. to Monte Fontana Secca. During a week's fighting they took and lost Spinoncia, took and lost and took again Monte Pertica, a little N.W. of Monte Grappa, but did not succeed at any point in breaking through the Italian line, nor in capturing Monte Grappa.

In the second week of Dec., an Austro-German force began the second battle by launching an assault N.W. of Monte Grappa, against the Solarolo salient and the Italian front by the Col della Berretta and the Col Caprile to the Brenta. The battle began on Dec. 11, and lasted for about ten days. On Dec. 11 the Italians were forced S. somewhat, losing part of the Col della Berretta and the whole of Monte Spinoncia. Next day they counter-attacked in the vicinity of Berretta, and regained most of the lost ground, but before nightfall were again pressed back.

After a brief lull the battle was resumed, and on Dec. 18 the Austrians took the summit of Monte Asolone and one of the two summits of Monte Tomba, thus outflanking Monte Grappa on both sides. It looked as if the Italians

must lose their strong positions on Monte Grappa, but they rallied magnificently, counter-attacking on Dec. 22, and winning the S. slopes of Asolone.

There was another pause, which lengthened out as the French moved into the Grappa region to support the Italians. Next the French, with whom were British batteries, advanced and drove the Austrians from a large part of Monte Tomba on Dec. 30, taking about 1,400 prisoners. Shortly afterwards the enemy was compelled to withdraw from his bridgehead at Zenson on the Piave.

In mid-June, 1918, the Austrians began the third battle of Monte Grappa by attacking from S.W. of Asiago to the sea. After a heavy bombardment on June 14, the Austrian infantry advanced in masses. They carried the forward positions of the Italians defending Col Caprile and Monte Asolone, captured part of the Italian second line of trenches, and taking Col Moschin, S.W. of Asolone, looked across the pass to the Brenta. They then pressed S. to the Col Raniero, thus outflanking the Grappa massif on the W., and reaching a point within two or three miles of the plain. Early in the afternoon the Italians counter-attacked, and their reserves were brought into action. Before the day closed the Austrians had lost most of the ground they had gained.

The fourth battle in the Grappa area began on the night of Oct. 24-25, 1918. Around Monte Grappa the attack was made by the fourth Italian army on the slopes of Monte Pertica; ground was gained, and 4,000 prisoners taken. On Oct. 26 the Italians captured Pertica. The Austrians counter-attacked in front of this height, as well as at Asolone and the Solarolo salient, and positions changed hands several times on Oct. 27. Next day the Italians advanced a short distance in a terrific conflict S. of Fontana Secca. Six days from the start the battle fluctuated, the Austrians bringing up their reserves, and resisting with stubbornness, but they were forced backward, except around Monte Spinoncia, where they made some slight gains. Farther E., on the W. side of the Brenta, where the twelfth army cooperated with the fourth, the Italians progressed in the Alano basin. See Italy; Montello; Piave, Battles of the; consult also Italy and the World War, T. N. Page, 1921.

Monteleone (anc. *Hipponium*). Town of Italy, in the prov. of Catanzaro. It stands on a hill, alt. 1,575 ft., overlooking the Gulf of Santa Eufemia, 70 m. by rly. N.E.

of Reggio. It has a castle built by Frederick II. Monteleone was built on the site of the Roman Vibo Valentia, which succeeded the older Greek town. Traces of both still remain. Monteleone was shattered by an earthquake in Sept., 1905. Pop. 10,100. There is another Monteleone in Italy, in the prov. of Avellino. Pop. 13,100.

Montélimar. Town of France, in the dept. of Drôme. It stands on a hill on the left bank of the Rhône, 93 m. by rly. S. of Lyons, and has industries in silk and flour-milling, and local trade in agricultural produce and wine. There are remains of a 12th century keep. Capital of Valdaigne in the Middle Ages, it was united with the Dauphiné to the French crown. Pop. 14,000.

Montello, BATTLE OF THE. Fought between the Italians and the Austrians, June, 1918. The Montello, which gives its name to the battle, is an isolated ridge, nearly 8 m. long and about 3 m. in width, which runs roughly E. and W., with the R. Piave on the N. and E., from Nervesa to Cornuda, N.E. of Asolo, Italy. This hog's back, which is partly farmed and partly forested, was not seriously attacked until the Austrian offensive of June, 1918. For some months between Nov., 1917, and June, 1918, it had been occupied by the British, and strongly fortified.

In March, 1918, the British were transferred to the Asiago area, and the Montello was taken over by the Italian eighth army, under Pennella, its line also including the middle Piave to the point where the front was held by the third army, under the duke of Aosta, down to the sea. Like the rest of the front attacked by the Austrians in mid-June, 1918, the Montello was heavily bombarded on June 14, and next day under cover of gas-shells and a smoke barrage they forced the crossings of the Piave. They drove the Italians out of their first entrenchments, and advanced S.W., gaining a good deal of ground in the centre and W. part of the Montello.

By the close of June 16 the greater portion of the ridge was in the hands of the Austrians, their line running from Ciano on the W. to San Andrea on the E. The rly. from Asolo through Montebelluna to Treviso was seriously in jeopardy. But the Italian reserves were thrown into the battle, and after a bitter struggle the Austrians were checked, and slowly forced back. On June 17-19 the Italians regained more ground, and by June 20 the Montello was practically cleared of the enemy. See Piave, Battles of the.

Montem. Name given to a custom formerly observed at Eton College. Every third year on Whit-Tuesday all the boys, led by the captain of the school, marched to an eminence called Salt Hill, whence the phrase *ad montem* (Lat. to the hill), and collected money—hence called salt—from the spectators of the ceremony. The sum collected sometimes exceeded £1,000, and was given to the captain of the school as a contribution towards the cost of his maintenance at the university. How the custom originated is not known. It was in existence as early as 1561 and was observed until 1844. See Eton.

Montenegro (Serb. *Crna Gora*, black mountain). Former kingdom of Central Europe, now part of Yugo-Slavia. Forming part of the Karst limestone heights which fringe the N.E. Adriatic Sea, it lies between Herzegovina and Albania, and, like them, drops steeply to the narrow Dalmatian coast strip; inland it descends almost equally abruptly to the plains of Serbia. Its inaccessibility long enabled a branch of the Serbs to maintain its independence against Venetians, Turks, and Austrians. It extends about 115 m. from N. to S. and from E. to W., and has an area of nearly 6,000 sq. m. In the N.E. and S.E. the peaks rise to 8,000 ft.; those in the N.E. are bare, desolate limestone; in the S.E. the Brda is forested and well watered.

By the treaty of Berlin in 1878 Montenegro gained a short coastline, including the harbours of Antivari and Dulcigno and a section of the plain surrounding the lake of Scutari. The Zeta flows into this lake, the Tara and Lim go N.W. to the Drina, and the Drin and its affluents drain the plain of Jakova.

The people, who number 440,000, in general adhere to the Greek Orthodox Church under a metropolitan bishop; there is a Roman Catholic archbishop at Antivari. Most of them live on the land under the South Slav system of communal landholding. Maize, tobacco, oats, barley, and buckwheat are produced in small quantities. In favourable situations vine and olives are grown. Cattle rearing is of considerable importance.

A narrow gauge rly. is open from Antivari to Vir Pazar and good carriage roads afford communication between the principal places. Cetigne is the capital, Jakova the largest town.

After the great Serbian defeat at Kosovo, 1389, the Montenegrins established themselves within their

mountain fastnesses under a Serbian dynasty. Danilo Petrovich proclaimed himself vladika or prince bishop in 1697, and strengthened his position by an alliance with Russia. The combination of spiritual and temporal authority was retained by successive rulers until 1851, when Peter Petrovich II died, and his successor Danilo I became gospodar or prince, a title recognized by France and Russia at the Congress of Paris in 1856. By the Berlin Treaty, 1878, the independence of the principality was formally recognized by Turkey and the remaining signatory powers. A constitution was formally adopted in 1905 and the first Skupshchina, or National Assembly, met in 1906. On the jubilee of his accession, Nicholas I assumed in 1910 the title of king. Montenegro acted with Serbia in the Balkan wars, and in consequence received accessions of territory and pop., including nearly half of the sanjak of Novi Pazar.

Montenegro sided with the Allies during the Great War; after the armistice, Nicholas being an absentee in France and the kingdom in the hands of Serbian troops, a national assembly was elected and met at Podgoritza on Nov. 24, 1918. Within two days Nicholas was deposed, and it was decided to unite with Yugo-Slavia. These developments were, after a considerable delay, approved by the Peace Conference. See Yugo-Slavia.

B. C. Wallis
Bibliography. The Balkans, W. Miller, new ed. 1908; The Burden of the Balkans, M. E. Durham, 1912; A History of Montenegro, F. S. Stevenson, 1914; Montenegro in History, Policy, and War, A. Devine, 1918; Peace Handbooks, No. 19, Montenegro, pub. H.M. Stationery Office, 1920.

Montenogro, CONQUEST OF. When Austria declared war on Serbia on July 28, 1914, Montenegro at once threw in her lot with the Serbians, whose king, Peter, had married a daughter of her own king, Nicholas. In conjunction with the Serbians, the Montenegrins, whose forces were militia, 40,000 in number, with very little artillery, invaded Bosnia in the first stages of the war, and all through the four invasions of Serbia rendered good service by protecting the left flank of the Serbian armies.

As soon as the combined efforts of the Austro-German and Bulgarian armies had driven the Serbian armies out of Serbia, Austria undertook the conquest of Montenegro. A Bulgarian force co-operated by taking Jakova on Dec. 3, 1914. During that month

the Austrians advanced a short distance into Montenegro, and captured Plevlje Ipek and Biopolje, but suffered a repulse at Lespenatz. In the last days of the year Mount Lovtchen, the chief stronghold of the Montenegrins, and the position protecting Cetigne, was heavily shelled. On Jan. 6, 1916, the Austrian commander Kövess attacked the Montenegrins on the Tara, Lim, and Ibar, and severely bombarded Mount Lovtchen from warships in the Gulf of Cattaro.

Berane, a town on the Lim, was captured on Jan. 10, and Mount Lovtchen fell on the same day, the Austrians everywhere being in overwhelming force, and the Montenegrins short of guns, munitions, and food. With Lovtchen in the hands of the Austrians, the Montenegrins evacuated Cetigne, which was occupied by Kövess on Jan. 13. Negotiations took place, the object of Montenegro being to gain time to ensure the retreat of her forces to Podgoritza and Scutari, and thence into Albania. The king and the royal family, with the government, escaped to Italy. Continuing their advance, the Austrians took Scutari on Jan. 23, and San Giovanni di Medua on Jan. 25, thereafter marching S. to Durazzo. By the end of Jan., 1916, Austria was in full occupation of Montenegro.

At the end of Oct., 1918, the advance of the Italians through Albania, and of the Serbians and the French on the S.E., determined the Austrians to withdraw without offering serious resistance. Scutari was entered by the Italians on Nov. 1, and a little later they entered also the coast towns of Antivari and Dulcigno, while the Serbians had occupied Podgoritza and Cetigne.

Montenotte. Village of Italy, in the prov. of Genoa. It stands among the Ligurian Alps, 8 m. N.W. of Savona. It gives its name to the battle fought, April 12, 1796, when Napoleon gained his first victory over the Austrians. The battle was not decisive, and the whole of the French army was not engaged; but the Austrians, seeing their line of retreat threatened, fell back on Dego, which was stormed two days later. See Napoleonic Campaigns.

Montepulciano. City of Italy, in the prov. of Siena. It stands on a hill, alt. 2,000 ft., 28 m. (44 m. by rly.) S.E. of Siena. A walled and picturesque city, it has a Renaissance cathedral, several fine churches, the Palazzo Comunale, and many other palaces. It is noted for its wine. Pop. 16,000.

Montereau. Town of France, in the dept. of Seine-et-Marne. It lies at the meeting of the Yonne with the Seine, 13 m. by rly. E. of Fontainebleau, and is a rly. junction on the main Paris-Sens line. It has industries in porcelain, pottery, brickmaking, tanning, zinc-white, and cement. The church dates from the 13th-15th centuries. Montereau was the site of an 8th century monastery of S. Martin



Monterey Cypress. Leaves and fruit of the Californian evergreen

(Monasteriolum), and in the 14th century belonged to the king of Navarre. Here John the Fearless, duke of Burgundy, was assassinated in 1419. Near by was fought the battle of Montereau, Feb. 18, 1814, when Napoleon defeated the Württembergers and Austrians. Pop. 8,600.

Monterey. City and seaside resort of California, U.S.A. It stands on Monterey Bay, 125 m. from San Francisco, and is served by the Southern Pacific Rly. The industries include canning and fishing, and it has a good harbour from which large quantities of oil are shipped. Owing to its beautiful situation and mild climate, it is visited by pleasure-seekers. In appearance it is still largely Mexican.

The town owes its origin to a mission founded by the Franciscans in 1770, although the site had been visited and the place named by a Spanish sailor nearly two centuries before. It was then in the Mexican prov. of California, being for some years the capital. In 1846 it was taken by the U.S.A., and in 1849 the convention that drew up the constitution of California met here. In 1853 it was made a city. As "the old Pacific capital," Monterey is described by R. L. Stevenson in *Across the Plains*. Pop. 5,000.

Monterey or **MONTERREY.** City of Mexico. The capital of the state of Nuevo Leon, 1,625 ft. above sea level, it is 165 m. W. of Matamoros, and is served by the National and other rlys. Situated in

a range of the Sierra Madre, amid orchards and gardens, it is the seat of a bishopric. There are foundries, steel works, breweries, saw and flour mills, large smelters, and ice factories. Agriculture and silver mining are engaged in. Formerly called Leon, Monterey was founded in 1560, and in 1599 became a city under its present name. In 1909 it was much damaged by flood, and more than 1,000 people lost their lives. There is a wireless station here. Pop. 81,000.

Monterey Bay. Indentation of the coast of California, U.S.A. About 24 m. broad at the entrance, it forms a deep and commodious anchorage, and has two light-houses. On the N. shore is Santa Cruz, and on the S. shore are Monterey and Pacific Grove.

Monterey Cypress (*Cupressus macrocarpa*). Large evergreen tree of the natural order Pinaceae, a native of California. It attains a height of over 50 ft., growing very rapidly, and has close set branches and minute overlapping, scale-like dark green leaves.

Monte Rosa. Mountain mass of the Pennine Alps (*q.v.*) on the Italo-Swiss border. It lies between the canton of Valais and Piedmont, 50 m. E. of Mont Blanc. Alt. 15,217 ft. Dufourspitze, the highest summit, is in Switzerland, and was first ascended in 1855 by G. and C. Smyth, Hudson, and their companions. On the N.W. is the Gorner glacier, and on the S. is the large Monte Rosa glacier. An observatory was established here in 1904 at an alt. of 15,000 ft. See Alps.

Montes, ISMAIL (b. c. 1856). Bolivian statesman. Educated for the legal profession at La Paz University, he entered the army in 1879, serving in the Chilean War. In 1893 he was acting minister of war, and in 1894 became president of the republic. He was minister to Great Britain, 1910. President once more in 1913, he brought about the reform of the Bolivian banking system in 1914.



Monterey, California. House in which R. L. Stevenson wrote *The Silverado Squatters*

Monte San Giuliano (anc. *Eryx*). City of Sicily, in the prov. of Trapani. It stands on the top of a steep hill, alt. 2,465 ft., overlooking the seaport of Trapani, 25 m. N.N.E. of Marsala. It has a cathedral dating from the 15th century, and restored in 1865. The city occupies the site of the long-famous Eryx (*q.v.*), of which some of the prehistoric and Phoenician walls remain under the Roman fortifications. Pop. 5,000.

Monte Sant' Angelo. Town of Italy, in the prov. of Foggia. It stands on the S. slope of Monte Gargano (*q.v.*), alt. 2,766 ft., 10 m. by road N. of Manfredonia. It has a picturesque 15th century castle, and the church of S. Michele, built in 491 over a grotto, a famous pilgrim resort. Pop. 23,000.

Montesarchio. Town of Italy. It is 13 m. N.N.W. of Avellino in the dist. of Benevento. On a neighbouring hill was the old Samnite Caudium (*q.v.*). Pop. 6,000.

Montespan, FRANÇOISE ATHÉNAÏS DE ROCHECHOUART, MARQUISE DE (1641-1707). French courtier,

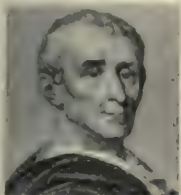
mistress of Louis XIV. Born at Tonnerre, near Rochefort, she was the daughter of the duke of Mortemart, and went to court as a maid-in-waiting to the queen in 1660. In 1663 she married Louis, marquis of Montespan, by whom she had two children. A woman of great beauty, she earned some notoriety by her indulgence in black magic, and in 1667 became the king's mistress, the children of the union being made legitimate by the king in 1673, and a separation from her husband being pronounced in 1674. After 1675 the liaison weakened, though the marquise, displaced now by Madame de Maintenon,



Marquise de Montespan, French court lady

remained at court until 1691, when she left Versailles for a religious life. She died at Bourbon-l'Archambault, Allier, May 27, 1707. See *Mémoires*, 1829, Eng. trans. 1895; M. et Louis XIV, P. Clément, 1869; La Vallière et Mme. de M., A. Houssaye, 1895.

Montesquieu, CHARLES LOUIS DE SECONDAT, BARON DE (1689-1755). French writer. Born of



Baron de Montesquieu, French writer

affluent parents in Gascony, Jan. 18, 1689, Montesquieu was trained for the law, and succeeded his uncle, whose wealth and whose title of Montesquieu he also inherited, as the holder of a high legal office in the parlement of Bordeaux in 1716. There he remained until 1726, when he resigned his position and went to live in Paris, being admitted to the Academy. A long visit to England, part of a prolonged tour in Europe, made a deep impression upon him, and soon after his return to France he settled down to literary work at his château of La Brède, near Bordeaux, ordering his estates and outer life on the model of an English landowner. He died there Feb. 10, 1755.

Montesquieu early began to write, and continued to do so to the end of his life. Of his writings three stand out as serious contributions to human thought. His *Lettres Persanes*, which appeared anonymously in 1721, pretend to be the outspoken comments of two Persians on their visit to Europe, and are a wonderful satire on the manners and customs of the age. His *Considérations sur les Causes de la Grandeur et de la Décadence des Romains*, first published in Amsterdam in 1734, show the workings of a powerful and original mind, strengthened by wide reading and by the absence of fettering and conventional theories. The same qualities are revealed in his third and much longer great book, the *Esprit des Lois*, first published at Geneva in 1748. An edition of Montesquieu's writings appeared in seven volumes at Paris, 1875-79, edited by E. Laboulaye. See *Esprit des Lois*; Government; consult also *Histoire de Montesquieu, sa Vie et ses Oeuvres*, L. Vian, 2nd ed. 1879; Montesquieu, Sir C. P. Ilbert, 1904.

Montessori, MARIA (b. 1870). Italian educationist. Studying at the university of Rome, she took a medical degree in 1894, and acted as assistant doctor to



Maria Montessori, Italian educationist

a psychiatric clinic for mentally deficient children. From this and her experience, 1898-1900, as head of a state institute for the education of such children, she learned much that went to form her own system of education. She published several works on her methods, and lectured in England in 1920.

Montessori Method. Method of teaching young children. It was developed by Madame Montessori in Rome, and since widely applied by advanced educationists. She evolved methods which had astounding results with the mentally deficient, and went on to find that these were even more successful with normal infants.

The method demands careful observation of the child's physical condition by monthly measurements, which are chartered for the teacher's guidance; special furniture adapted to give the child the completest possible freedom of movement, and to enable him to be independent and to attend to his own personal wants, washing, dressing, etc.; an active, spontaneous discipline based on full liberty for the child; and the abolition of prizes and punishments.

The teacher's function is to direct, and not to repress the child's activities. Stress is laid on simple, scientifically arranged physical exercises; on open-air work, gardening, the care of animals, etc., so that the child may develop on the historical lines of the race; on plastic work which may, in the child's fifth or sixth year, reach the stage of the potter's wheel; on the definite training of the senses to receive delicate impressions, special apparatus being devised for the purpose; and on a careful method of teaching reading and writing, the child passing from simple design to writing.

There is as yet no formal school for the instruction in the method in England, but there are classes in London, and the Montessori Society, with headquarters in Tavistock Place, has a library where the literature of the subject may be studied and where the didactic material may be seen. Montessori teaching has only been adopted in a few schools of the more advanced type, but her theory of pedagogy has been widely

studied, and exercises an increasing influence on educational thinkers. See Education; Kindergarten; consult also The Montessori Method, A. T. Smith, 1912; The New Children, Sheila Radice, 1920.

Monteverde, CLAUDIO (1567-1643). Italian composer. Born at Cremona, he became as a boy a violinist in the service of the duke of Mantua. His talents attracted notice, and in 1602 he was made master of the chapel there. He left that city to become



Claudio Monteverde, Italian composer

music master at S. Mark's, Venice, in 1613, and there he remained until his death, Nov. 29, 1643. His operas, *Arianna* and *Orfeo*, mark important advances in the development of opera, not only in the setting of the words, but in the freedom of the harmony and the treatment of the orchestral instruments. The harmonic style which he thus invented he outlined in a book, and defended in controversies with rival musicians.

Montevideo. Maritime department of Uruguay, at the mouth of the Rio de la Plata. Its surface is hilly, with much pasture land for the grazing of cattle. Exports include beef and other animal products, and wine. Its area is 256 sq. m. Pop. 382,700.

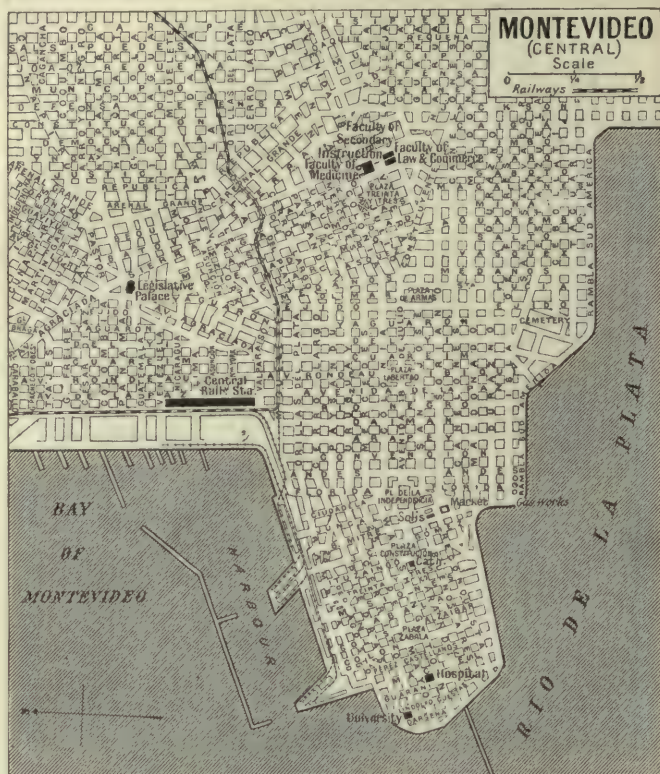
Montevideo. City of Uruguay, capital of the republic and of the dept. of Montevideo. It originally occupied a small peninsula between the Rio de la Plata and a bay, [of which it formed the S. extremity. The city has spread some miles inland in an E.



Montevideo arms



Montevideo, Uruguay. Teatro Solís, the principal theatre, built in 1856 with seats for 3,000 spectators



Montevideo, Uruguay. Plan of the central districts of the city

direction, and now lines the bay on its three sides. The Cerro, a low, conical hill, alt. 500 ft., at the head of the bay, is crowned by an old fort, still in use, and a lighthouse.

Montevideo is the principal seaport of the country, and the terminus of several railway lines.

Built on a regular plan of *cuadradas*, or squares, the streets extend N., S., E., and W. from the old central point, the Plaza de la Independencia, and the closely built section of the town, standing on a long tongue of land thrust into the bay, continually enjoys sea breezes. One of the best built cities in the western hemisphere, many of its public buildings are very imposing. The seat of an archbishopric with two suffragan bishops, it has a cathedral, numerous interesting churches, a university, schools, many theatres, and hospitals. The Plaza Constitución is the very heart of the city's life, and here are the cathedral, the old

legislative buildings, clubs, hotels, and business and newspaper offices. Near the city are two race-courses and a bull-ring. The tramways have been electrified, and the streets are lit with electric light. Its immense harbour is somewhat exposed and obstructed by reefs,



rendering it insecure from the heavy storms which frequently occur. The seaside suburbs of Pocitos and Ramirez are popular resorts for the citizens of Buenos Aires.

The climate is healthy, although a high summer temperature prevails. Beef, hides, and other animal products are exported. The city was founded in 1726, and captured by the British in 1807, but was relinquished when General Whitelocke met with disaster at Buenos Aires. It became free in 1814, and was made capital of the republic in 1828. Pop. 379,000. See Uruguay.

Monte Viso. Peak in Piedmont, Italy. It is the highest point of the Cottian Alps. It stands near the sources of the Po, and has an alt. of 12,608 ft. The starting point for the ascent is Crissolo.

Montez, LOLA (1818-61). Stage name of the Irish dancer, Marie Dolores Eliza Rosanna Gilbert. Born at Limerick, she lost her father, an army officer, when a child in India. After a clandestine marriage in 1837, which ended in a divorce five years later, she took up dancing and appeared in London as Lola Montez, Spanish dancer. After touring through Europe and Russia in 1847 she

fascinated Ludwig I of Bavaria, who created her countess of Landsfeld, and she began to take an active part in politics. Returning to England after the Revolution of 1848, she married a Guards officer, George Heald, in 1849, but his relatives taking proceedings against her for bigamy, she induced him to take her to Spain and thence to America, 1851, where she was again successful on the stage. On Heald's death the same year, she married and left her third husband, and after touring in Australia, returned to America, where she devoted herself to works of charity. She died



Lola Montez, Irish dancer



Montevideo, Uruguay. Façade of the cathedral, completed in 1905. Top, left, Plaza de la Independencia, the principal square, and the Avenida 18 de Julio

in New York, Jan. 17, 1861. See Lectures, including Autobiography, 1858; Life, E. B. D'Auvergne, 1909.

Montezuma I (c. 1390–c. 1469). Aztec ruler of Mexico. He began to reign in 1437. He extended his dominions to the Pacific and the Gulf of Mexico, crushed the Tlascalans, annexed Chalco, and enlarged Tenochtitlan, his capital,

on the site of which Mexico City is built. See Mexico.

Montezuma II (1466–1520). Last Aztec ruler of Mexico. Distinguished as warrior and

Montezuma II,
Ruler of Mexico

legislator, he extended his conquests to Honduras and Nicaragua, but his arrogance and despotism led to the Spaniards, under Cortés (1519), receiving a more cordial welcome than they otherwise might have had. He was killed while a prisoner in Spanish hands.

Montferrat. Former duchy of Italy. It was situated between the republic of Genoa, the river Po, and the Maritime Alps. Ruled by its own margraves, it existed from the dissolution of the empire of Charlemagne about 900 until 1305. The duchy consisted of upper and lower Montferrat, Casale being the capital. The reigning family, who laid claim to the throne of Piedmont, ended with John I, whose nephew, son of the Empress Irene of Constantinople, succeeded to the estates, and was the first of the Montferrat-Palaeologus house. On the extinction of this family in 1533, the duchy passed through the Gonzagas of Mantua to Savoy, and in 1703 became part of Piedmont.

Montfort, SIMON DE (c. 1208–65). English statesman. A younger son of Simon de Montfort, count of Toulouse and earl of Leicester, who led the crusade against the Albigenses, he inherited the English earldom, 1232, and six years later married a younger sister of Henry III. Although long suspected as a foreigner, he took a leading position among the barons who were opposed to the king. Simon's unwavering love of justice, as he

conceived it, his strong religious feeling, and his masterfulness gave him the title of Earl Simon the Righteous. He had at heart no less what he conceived to be the rights of the people than the privileges of the barons; he desired the predominance of law, but, like Cromwell, he could see no security except in what would have been virtually his own dictatorship.

In 1253 the contest with the crown came to a head, and in 1259 Montfort and the barons forced Henry to accept the provisions of Oxford, which placed the government of the country in the hands of baronial committees, in each of which Montfort was predominant. In 1261 Henry renounced the provisions. The dispute was referred to the arbitration of Louis IX of France, who gave his award, the Mise of Amiens (*q.v.*), against the barons, Jan. 23, 1264. Montfort took up arms, routed and captured the king at Lewes, May 13, and for a year was in effect dictator. In Jan., 1265, he summoned what is often called the parliament, which for the first time included elected representatives of the boroughs. Now, however, those barons who were jealous of Montfort's power made common cause with the king, and Montfort was defeated and killed at Evesham, Aug. 4, 1265. See Evesham; Lewes; consult also Lives, G. W. Prothero, 1877; M. Creighton, 1895.

Mont Genève. Pass of the Cottian and Graian Alps. Between Italy and France, it connects the valleys of the Dora Riparia and the Durance, on the road from Turin to Briançon. Reaching an alt. of 6,100 ft., it is one of the easiest of the Alpine passes. See Cottian Alps.

Montgolfier, JOSEPH MICHEL (1740–1810). French inventor. Born at Vidalon-lez-Annonay, son of a paper maker, he became interested in aeronautics, and with his brother, Jacques Etienne (1745–99), studied the possibilities of making balloons. Their crude experiments, 1782–83, led to the invention of the modern hydrogen balloon. They were honoured

by Louis XVI, and Joseph was appointed to various offices by Napoleon. They wrote several books on aeronautics, including *Les voyageurs aériens*, 1784. See Aeronautics; Balloon.

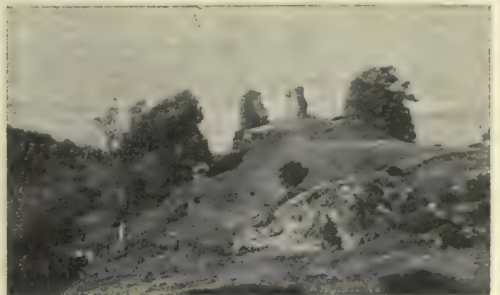
Montgomerie, ALEXANDER (c. 1545–1611). Scottish poet. Son of Hugh Montgomerie of Hesselhead Castle, Ayrshire, he became attached to the Scottish court under the regent Morton, and travelled on the Continent. His poems are now only literary curiosities, with the exception of *The Cherrie and The Slae*, a combination of love poem and moral allegory, written in the 14-line stanza, and abounding in fine passages. They were edited by Cranstoun for the Scottish Text Society in 1886–87; additions by G. Stevenson, 1910.

Montgomery. Mun. borough and county town of Montgomeryshire, Wales. It stands near the Severn, 7 m. from Welshpool, with a station on the Cambrian rly. The name is that of a Norman family, one of whom built a castle here about 1100.

Around this the place grew, becoming a chartered town in the 13th century. There are ruins of the castle which, long a



Montgomery arms



Montgomery, Wales. Ruins of the ancient castle, formerly held by the Mortimer family

coveted stronghold, was destroyed by the parliamentarians after 1644. Market day, Thurs. Pop. 951.

Montgomery. City of Alabama, U.S.A., state capital, and the co. seat of Montgomery co. It stands on the Alabama river, at the head of navigation for large vessels, 178 m. by rly. N.E. of Mobile, and is served by the Louisville and Nashville and other rlys. A commercial and rly. centre, it has steamship communication with Europe, the Panama ports, and New York. Prominent buildings include the capitol and city hall.

One of the principal cotton depots of the U.S.A., Montgomery exports between 400,000 and



Simon de Montfort, as represented in a window, Chartres Cathedral



Montgolfier Brothers, French inventors
From a plaque

500,000 bales per annum. It is a distributing centre, and has manufactures of fertilisers, syrups, lumber, and machine shop products, confectionery, cigars, carriages and wagons, and cotton goods. Settled in 1814, renamed New Philadelphia in 1817, it was incorporated in 1837, and superseded Tuscaloosa as the state capital, 1847. It was the seat of the Confederate government from Feb. to May, 1861, and was taken by the Federal forces, April 12, 1865. Pop. 43,500.

Montgomery. District and town of India, in the Punjab, Multan division. The district lies between the Sutlej and Ravi rivers, in the Bari Doab. The middle of the area is high and dry, and cultivation depends largely upon the irrigation canals, the rainfall being but 14 ins. a year. Wheat and pulses are the chief crops. The arid, higher ground is devoted to the herds of the pastoral Jats. The town is close to the Ravi, and the Lower Bari Doab Canal brings irrigation water. It dates from 1864, when the village of Sahiwal was made the dist. headquarters, and renamed after the lieutenant-governor of the Punjab. Area 4,652 sq. m. Pop., dist., 535,300; town, 8,100.

Montgomery, GABRIEL, COMTE DE (c. 1530-74). French soldier. Son of Jacques de Montgomery, and grandson of a Scottish officer in the French service, he went to Scotland in 1545, with forces sent to Mary of Lorraine, by Francis I. On June 30, 1559, in a tournament, he accidentally inflicted a mortal wound on Henry II of France. Taking refuge in England, he became a Protestant, and returned to join the Huguenot armies in 1562. He defended Bourges and Rouen against royal forces, unsuccessfully attacked Mont St. Michel, 1563, and in 1569 invaded the county of Béarn, capturing Orthez. He escaped from the massacre of St. Bartholomew, 1572, taking refuge in Jersey, and again in England. In 1573 his attempt to enter La Rochelle failed, and he was captured at Domfront. Taken to Paris, he was tried and executed, May 25, 1574. His sons Jacques (1570-1609) and Gabriel (d. 1635) also played a prominent part in the religious wars. See Life, L. Marlet, 1890.

Montgomery, JAMES (1771-1854). Scottish poet. Born at Irvine, Ayrshire, Nov. 4, 1771,



Montgomery

After T. H. Illidge

the son of a Moravian missionary, he was apprenticed to a baker, and in 1792 became a clerk in the office of The Sheffield Register. In 1795 he started The Sheffield Iris, which he edited until 1825, twice getting into trouble for publishing seditious matter. He was a man of exemplary character, reflected in the strong religious tone of his poems, of which *The World Before the Flood*, 1813, and *Greenland*, 1819, are the best known. He also wrote numerous hymns, including *Forever with the Lord!* and *Hail to the Lord's Anointed*. He died at Sheffield, April 30, 1854. See Life, J. Holland and J. Everett, 1854-56; *Poetical Works* repr. 1881.

Montgomery, ROBERT (1807-55). British minor poet. Born at Bath, the natural son of a clown named Gomery, Montgomery, as the son called himself, early developed a facility in the composition of mediocre verse. Notwithstanding a scathing



Robert Montgomery.
British poet.
From an engraving

criticism of two of his efforts, *The Omnipresence of the Deity*, 1828, and *Satan*, 1830, by Macaulay in *The Edinburgh Review*, April, 1830, he enjoyed a vogue which bore no relation to his intrinsic merits. In 1830 Montgomery went to Lincoln College, Oxford, graduated, took orders, and became a successful preacher in Glasgow and in London. He died at Brighton, Dec. 3, 1855.

Montgomeryshire. Inland county of N. Wales. Its area is 797 sq. m. It is almost entirely surrounded by mountains, and is itself a hilly region. The Plynlimon range is in the S.W., and elsewhere on the borders are the Berwyn Hills, Breidden Hills, and Kerry Hills.

The chief rivers are the Severn, which rises here, and its tributaries, the Tanat and Vyrnwy, also the Wye. Herein is the artificial lake Vyrnwy. Oats are grown, sheep and ponies are reared, and slate is quarried.

The chief town is Montgomery, but Welshpool, Llanidloes, and Llanfyllin are larger. Newtown and Machynlleth are urban districts. The Cambrian Rly. and the Montgomeryshire canal, 24 m. long, serve the county. There are some British and many Roman remains in the county, which, before it was made into a shire, was part of the district of Powys. It sends one



Montgomeryshire.
Seal of the County Council



Comte de
Montgomery,
French soldier



Montgomeryshire. Map of the inland and pastoral county of North Wales

member to Parliament. Pop. 51,317. See Highways and Byways in N. Wales, A. G. Bradley, 1898.

Month. Period of time chiefly regulated by the moon's motion round the earth. There are various months according to the different methods of computation. (1) The lunar month, lunation or synodic month, is the time which elapses between consecutive new or full moons, and its length on the average is 29 days, 12 hours, 44 minutes, 2·8 seconds. (2) The tropical month is the revolution of the month with respect to the movable equinox. It is 27 days, 7 hours, 43 minutes, 4·71 seconds. (3) The anomalistic month is the time in which the moon returns to the same point of her movable elliptic orbit. It is 27 days, 13 hours, 18 minutes, 37·4 seconds. (4) The sidereal month is the interval between two successive conjunctions of the moon with the same fixed star. It is 27 days, 7 hours, 43 minutes, 11·54 seconds. (5) The nodical month is the time in which the moon accomplishes a revolution with regard to her movable nodes. It is 27 days, 5 hours, 5 minutes, 35·6 seconds. (6) The calendar month is the month recognized in the almanac, consisting of an arbitrary number of days. (7) The solar month, the twelfth part of a solar year, consists of 30 days, 10 hours, 29 minutes, 4 seconds. See Calendar.

Monti, VINCENZO (1754-1828). Italian poet. He was born at Fusignano, near Ravenna, Feb. 19, 1754. His lyrical tragedy, *Aristodemo*, 1786, rendering the grief of a father for having slain his daughter, for having slain his daughter, was a romantic tragedy, Galeotto Manfredi, 1788. In 1793 he produced a Dantesque epic, *Bassevilliana*, the subject being the murder in Rome of Hugo Basseville, representative of the French republic. This was translated into English by H. Boyd, 1805, and by Lodge, 1845. Later he became Napoleon's historiographer in Italy and his panegyrist, most notably in his *Mascheroniana*. He translated the *Iliad* into Italian. He died at Milan, Oct. 13, 1828.



Vincenzo Monti,
Italian poet

Montian. In geology, a division of the Upper Cretaceous system of rocks. See Cretaceous System.

Montigny-sur-Sambre. Town of Belgium, in the prov. of Hainaut. It lies 3 m. E. of Charleroi, on the

left bank of the Sambre, in the midst of the thickly populated industrial area of the valley. The town has important coal mines in the vicinity, and various metal-working, engineering, and glass-making industries. It was occupied throughout the Great War by the Germans, who stripped its factories. Pop. 18,800.

Montilla. Town of Spain, in the prov. of Córdoba. It stands on a spur of the Sierra de Montilla, alt. 1,165 ft., 31 m. by rly. S.S.E. of Córdoba. It is noted for its wine, Amontillado (*q.v.*). The birthplace of Gonsalvo de Córdoba (*q.v.*), it contains the ruined castle of his father, Fernandez. Montilla manufactures coarse linen, olive oil, and pottery. Pop. 13,600.

Montluc OR **MONLUC**, BLAISE DE (1502-77). French soldier.

Born of a good family in Gascony, he became, after his father, the seigneur of an estate there. Beginning in the ranks, he saw much service in the French army in Italy. He made a name by his de-



Blaise de Montluc,
French soldier

fence of Siena in 1555, and, a tried warrior, the king was glad of his services when the civil war broke out in France. In 1574 he was made a marshal, and he continued in the field until his death, some time in 1577. Montluc is known as the author of some Commentaries which deal with his campaigns between 1521 and 1574. Written in a vivid and attractive manner, they afford valuable material for the history of the time. Henry IV named the book the Soldier's Bible. There is an edition in five vols., 1864-72.

Montluçon. Town of France, in the dept. of Allier. It stands on the Cher, 50 m. S.W. of Moulins, and consists of an upper or old town and a newer one below. In the former are the churches of Notre Dame and S. Pierre, the latter a Romanesque building begun in the 12th century, and the castle. In the newer town are factories for making glass, chemicals, iron and steel goods, sewing machines, etc. In the neighbourhood are coal mines. Pop. 34,000.

Montmartre. Arrondissement of Paris, containing the *quartiers* of Grandes-Carrières, Clignancourt, Goutte-d'Or, and Chapelle. It lies to the N. of Paris, within the fortifications, built on a hill rising to the summit crowned by the large

basilica of the Sacré Coeur, begun in 1875. The once famous Abbaye des Dames de Montmartre was founded in 1133. It was in Montmartre that the insurrection of the Commune broke out, Feb., 1871. The district is thickly populated, has many steep and narrow



Montmartre, Paris. Basilica of the
Sacré Coeur from the stairway in the
Rue de la Barre

streets, and is noted chiefly for the large number of cabarets and night restaurants which have grown up since about 1880. The large cemetery of Montmartre dates from 1798, and contains the graves of many distinguished men, including Murger and Gautier. The name is thought to be a corruption of Mont Martyr, given to it because in Roman times, so it is said, S. Denis and other martyrs were put to death here. There was a temple to Mercury on the hill. See Paris.

Montmédy. Town of France, in the dept. of Meuse. It lies on the river Chiers, 31 m. by rly. S.E. of Sedan, and from its junction a rly. runs into Belgium. The citadel is on a hill known in Latin as Mons Medius, whence the name of the town. There are industries in tanning, hat-making, and vinegar, with miscellaneous local commerce. Formerly in Belgian Luxembourg, it was taken by Louis XIV in 1657, and, after two days' bombardment, by the Prussians in 1870.

The fortress, with works constructed by Vauban, had not been modernised before the Great War, though it was of great strategical importance, dominating the rlys. from Belgian Luxembourg into France. Its commander evacuated it with the garrison on the night of Aug. 28-29, 1914. He attempted to reach the 4th French army on

the Meuse by forest tracks through the Woivre, but he marched into the midst of the 13th German corps on Aug. 29, and was captured with 700 of his men. Throughout the war Montmédy was an important centre on the German main line of communications. It was recovered by the Allies in Nov., 1918. Pop. 2,800.

Montmorenci, ANNE, DUC DE (1492-1567). French soldier.

Born at Chantilly, March 15, 1492, by 1522 he had become a marshal, having distinguished himself at Marignano, 1515, and at the defence of Mézières, 1521. In 1525, with Francis I, he was defeated and taken



Anne, Duc de Montmorenci, French soldier

prisoner at Pavia, but on the renewal of the war in 1536 he defeated Charles V at Susa, forced him to raise the siege of Marseilles, and two years later was made constable of France. In 1548 he crushed the insurrectionary movement in the S.W. of France, and he took part in the war in the Boulonnais, 1549-50, and the disaster at St. Quentin, 1557. He was mortally wounded at St. Denis in 1567, fighting against the Huguenots, and died in Paris on Nov. 12 of that year.

Montmorenci, HENRI, DUC DE (1595-1632). French soldier. A grandson of Anne de Montmorenci,

he played a prominent part in the fighting against the Huguenots which began in 1621. For his defeat of the Spaniards in Piedmont in 1630 he was made a



Henri, Duc de Montmorenci, French soldier

marshal. In 1632 he embraced the cause of Gaston d'Orléans, but was defeated at Castelnaudary, and executed at Toulouse, Oct. 30, 1632.

Montmorency. River of Quebec, Canada. A tributary of the St. Lawrence, it rises in the province, and flowing almost due south for about 80 m., falls into the larger river near Quebec. It is noted for the falls near the mouth, reached from Quebec, 8 m. away, by an electric rly. They are 265 ft. high, and are used for supplying Quebec with electric power. The river is associated with Wolfe's attempt on Quebec in 1759.

Mont Orgueil Castle.

Picturesque ruin on the island of Jersey, accessible by rly. from St. Helier. Standing on a rocky pinnacle dominating the village and harbour of Gorey, on the E. of the island, it was begun in the 10th century by the dukes of Normandy, and was given its name by the duke of Clarence, brother of Henry V. It successfully withstood a siege by the French in 1374. William Pryne (*q.v.*), while a prisoner here, 1637-40, wrote the poem *Mount Orgueil*, or *Divine and Profitable Meditations*, raised from the Contemplation of these three Leaves of Nature's Volume: Rocks, Seas, Gardens. The castle was vested in the States by the crown in 1905.

Montoro (anc. Epora). Town of Spain, in the prov. of Córdoba. It stands on a peninsula caused by



Montoro arms

the winding of the Guadalquivir, here spanned by a fine 16th century bridge, 27 m. by rly. N.N.E. of Córdoba. It produces olive oil and trades in timber, cattle, etc. Once a Moorish fortress, it has many Roman, Gothic, and Moorish remains. There are medicinal springs in the neighbourhood. Pop. 15,100.

Montpelier. Suburb of Bristol, England. It has a rly. station on the G.W. & M. Rlys, and lies E. of Clifton on the N. side of the city. Pop. 6,000.

Montpelier. City of Vermont, U.S.A., the capital of the state and the co. seat of Washington co. On the Winooski river, 41 m. by rly. E. by S. of Burlington, it is served by the Montpelier and Wells and the Central Vermont Rlys. It has a fine capitol. Other buildings include the court house, city hall, art galleries, state library, and grammar school. Manufactures include lumber, saddlery, hardware, and saw mill products, and granite is extensively worked. Settled in 1787, Montpelier became the capital of the state in 1805, was incorporated in 1855, and chartered as a city in 1894. Pop. 7,100.

Montpellier. Town of France, capital of the dept. of Hérault. It stands on a hill 7½ m. inland from the sea at Palavas, and 31 m. by rly. S.W. of Nîmes, is the junction



Mont Orgueil Castle, Jersey, with the harbour and village of Gorey, from the St. Helier road

of several rly. lines, and is the headquarters of an army corps. Its university, founded in 1289, and reconstituted in 1896 after suppression in 1794, is noted for its faculty of medicine. It has distilleries, tanneries, and printing works, leather, chocolate, and candle industries, and trades in corn, wine, and silk. The cathedral, a 14th century foundation, is chiefly modern, with a remarkable porch. The church of S. Anne is also modern. The Musée Fabre contains a large collection of paintings, French and Dutch schools being specially well represented, and houses also the town library. The botanical gardens were founded 1593, and are the oldest in France. The Peyrou is a promenade originally laid out in the 17th century, with a lofty aqueduct and ornamental basin.

Montpellier dates probably from the 8th century, gained a charter in 1141, and in the 16th century developed an autonomous constitution. A centre of Calvinism, it was taken by Louis XIII in 1622. Before the Revolution it was the capital of Languedoc. Pop. 80,000.



Montpellier, France. Porchway and towers of the cathedral of S. Pierre

Montpensier, ANNE MARIE LOUISE D'ORLÉANS, DUCHESSE DE (1627-93). Born in Paris, May 29, 1627, she was a daughter of Gaston d'Orléans, the brother of Louis XIII, and nursed hopes of becoming queen of France by a marriage with her cousin Louis XIV. In the Fronde (*q.v.*) La Grande Made-moiselle sided with the princes, and took a spirited personal part in the capture of Orléans. In Paris she took command at the Bastille, and in the Faubourg St. Antoine fighting, July 2, 1652, fired on the royal troops. After the



Duchesse de Montpensier

collapse, she retired to her estates of St. Fargeau until 1657. In 1681 she married Antonin, duke of Lauzun (1632-1723), a union which Louis had refused to allow eleven years before, but it proved unhappy. She died in Paris, leaving *Memoirs*, not published until 1729, which cover the period 1630-88.

Montreal. Largest city of Canada and the country's commercial capital. In the prov. of Quebec, it stands on an island in the St. Lawrence, 180 m. from Quebec, 420 m. from New York, and 620 m. from the sea. Its



Montreal city seal

population in 1911 was 470,480, having nearly doubled since 1901. In 1916 it was estimated, suburbs included, at 650,000. The majority are French, but there is a large British element.

In 1535 Jacques Cartier found here an Indian village named Hochelaga, but the foundation of the city was due to Maisonneuve, who called it the Ville Marie de Montréal, Mont Réal being the name given to the hill behind the settlement. The first settlers had a difficult time in keeping back the Indians, but before long their home became the centre of the fur trade. In 1760 Montreal was taken by the British, and from 1844 to 1849 was the country's capital, an honour it lost after a rising in which a mob destroyed the Parliament buildings.

The 19th century saw Montreal's wonderful growth. A series of improvements made the St. Lawrence a continuous highway for eight months of the year, and the city became the head of ocean navigation and the chief port for



Montreal. Plan of the commercial capital of Canada, showing the principal buildings and docks on the St. Lawrence

the products of the W., which are brought to it by rail or the Lachine Canal; the natural advantages were developed by a group of enterprising merchants, and after 1857 Montreal grew rapidly in wealth and population. Steamship companies made it their headquarters, and it became a banking centre, and the business metropolis of Canada.

The city is built on a series of terraces on the lower slopes of Mount Royal, which rises to about 800 ft. The wholesale and financial offices are near the harbour; half way up comes the shopping and retail centre, and still higher the residential section. To the E. is the French quarter, the English-speaking inhabitants occupying the W. streets and the adjoining municipality of Westmount. Of its ecclesiastical buildings the chief are the Roman Catholic cathedral of S. James, modelled on S. Peter's, Rome; Christ Church, the Anglican cathedral, S. James' Methodist church, Notre Dame, and the quaint Bonsecours church with its aerial chapel, S. Sulpice, the house of the wealthy Sulpicians, dates from the period of the French rule, and so does the Hôtel Dieu. In the Place d'Armes is a fine statue of Maisonneuve, and in Dominion Square is one of Macdonald.

The secular buildings include the General, Royal Victoria, and other hospitals, McGill University with its many spacious buildings, Laval University, and several theological

colleges, the City Hall and other public offices. The Château de Ramezay, where the French governors lived, is now a museum. Magnificent business premises, among them the Bank of Montreal, abound, as on the outskirts do noble residences. The summit of Mount Royal has been left as far as possible in its natural condition to form a public park of rare beauty. The daily papers include *The Gazette* and *The Star*, and several important French publications.

Montreal is the headquarters of two great transcontinental railways, the C.P.R. and the G.T.R. It is also served by the Inter-Colonial and C.N. railways, and has direct connexion with New York by several American lines. Trains for New York and the Maritime Provinces cross the St. Lawrence by the Victoria Bridge, which also carries road traffic, and a few miles above the city the C.P.R. has its own bridge. Shipping is the great industry, and the harbour has seven miles of deep water frontage, along which are docks and buildings fitted with every modern convenience for dealing with wheat and other commodities. It is the summer port for many steamship services that go from here up and down the St. Lawrence, to Europe in one direction and the Great Lakes in the other. There are flour mills, the shops of the C.P.R. and manufactures. It is an important banking centre. Its industries obtain ample electrical

power from the Shawinigan Falls and the Lachine Rapids. The city is governed by a council of mayor and aldermen, the latter being elected every two years. With adjacent places on the island, it sends 12 members to the Dominion House of Commons, and is also represented in the provincial legislature at Quebec.

Montreal. Island of Quebec, Canada, on which stands the city of this name. Its length is 30 m., extreme width 10 m., and area about 200 sq. m. It is famous for its apple orchards. Mount Royal (800 ft.) is the highest point.

Montreal, BANK OF. Canadian banking company. Founded in 1819, it was incorporated on July 2, 1882, has a paid-up capital of £3,200,000, and acts as financial agent to the government of Canada. Its headquarters are in Montreal, and, in addition to branches and agencies in Canada, it has others in New York, Chicago, and Mexico city. Its London offices are at 47, Threadneedle Street, E.C.

Montreal Star, THE. Canadian evening newspaper founded in Montreal as *The Evening Star*, Jan. 16, 1869, by Hugh Graham, who was knighted in 1908 and made a peer as Lord Atholstan (*q.v.*) in 1917, and George T. Lanigan. Its title was changed to its present one on April 16, 1877. The paper has been closely identified with all the principal patriotic movements in the Dominion. An associated publication is *The Family Herald and Weekly Star*.

Montreuil. Town of France, in the dept. of Pas-de-Calais. It is on the river Canche, 8 m. from its mouth, and 20 m. S.S.E. of Boulogne, and on the main rly. Boulogne-Amiens-Paris. Its ancient ramparts still survive, and it possesses many old buildings. The church of S. Sauve dates from the 12th century. Once on the sea, as indicated by its official name Montreuil-sur-Mer, it was long a noted posting-stage on the Calais-Paris highway. It is referred to in Sterne's *A Sentimental Journey*. From March, 1916, to April, 1919, it was the British G.H.Q. in the

Great War. Earl Haig had his headquarters at the Château de Beurepaire, 3½ m. to the S.E. It suffered night air raids in 1918. Pop. 3,400.

Montreux. Series of lakeside villages of Switzerland, in the canton of Vaud. They stand on the N.E. shore of Lake Geneva, about 50 m. N.E.

of Geneva, and extend from Clarens to Veytaux, including also Vernex, Les Planches, Glion, Colonges, and Territet. The central point is the town of Montreux-Vernex, with a rly. station and steamboat pier, quays, villas and gardens, a college, a kursaal, etc. There are English churches at Territet, Clarens, and Glion. Montreux is a tourist resort. Pop. 18,800.

Montrose. Royal, mun., and police burgh, and seaport of Forfarshire, Scotland. It stands on a peninsula where the South Esk falls into the North Sea, the river here forming an estuary and also what is known as Montrose basin, these



Montreux, Switzerland. Town on the eastern shore of the lake of Geneva

plies water, and owns five golf courses. During the Great War there was an aerodrome here.

Attempts have been made, but without success, to reclaim Montrose basin, which covers about 2 sq. m. In the estuary is the island of

Montrose arms Rossie or Inch-braycock, which is connected by a bridge with the town proper. Market day, Fri. Pop. 12,000.

Montrose, DUKE OF. Scottish title borne since 1707 by the family of Graham. In 1488 the title was



Montrose Forfarshire. General view of the town, with the harbour and quays

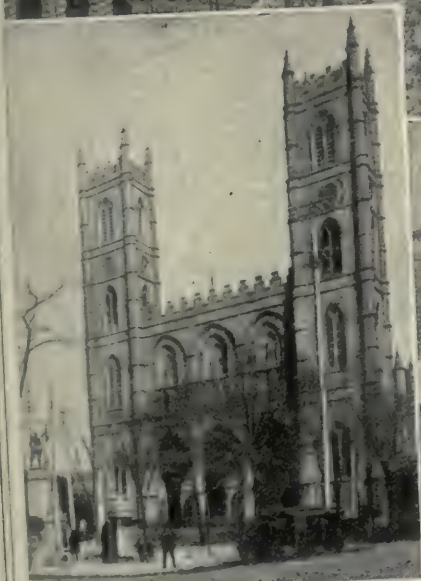
being S. and W. of the town respectively. It is served by the N.B. and Cal. Rlys., being 31 m. from Dundee and 34 m. from Aberdeen. The buildings include the parish church, town hall, academy, infirmary, etc. There is a harbour with docks and other accommodation. In addition to fishing and shipping, the industries include flax-spinning and the making of linen, rope, etc., also shipbuilding and brewing. Montrose was made a burgh in the 12th century, and was a flourishing seaport in the later Middle Ages. The council sup-

given to David Lindsay, earl of Crawford. It did not pass to his descendants, and, in 1505, William, 3rd Lord Graham, who had married a relative of the late duke, was made earl of Montrose. His grandfather had been made Lord Graham in 1445, and he himself was killed at Flodden. John, the 3rd earl, who succeeded to the title in 1571, was chancellor of Scotland, 1599-1604, and regent of the kingdom for James VI after that king succeeded to the English throne in 1603. He died in 1608. His son was the 4th earl, and the 5th was the soldier James Graham, who was made a marquess in 1644, and was the most famous member of the family.

James, the 4th marquess, was a leading politician at the time of the revolution of 1688. He supported



Montreuil, France. Courtyard of the Ecole Militaire or Barracks used as the offices of British G.H.Q. from March, 1916, to April, 1919



1. City Hall, before the fire, 1922; Nelson column in front. 2. S. James's Cathedral; built in 1868, modelled on S. Peter's, Rome. 3. Court House, from Champ de Mars. 4. General view of the city and Mount Royal with

Bank of Montreal in foreground. 5. The great church of Notre Dame, built 1824. 6. Victoria Jubilee Bridge over the St. Lawrence, built 1898-99. 7. The extensive quays on the St. Lawrence of the Canadian Pacific Railway

MONTREAL: BUILDINGS AND SCENES IN THE COMMERCIAL CAPITAL OF CANADA

the accession of George I, helped forward the union of the Parliaments, and in 1707 was made a duke. After this event he was a secretary of state and keeper of the great seal of Scotland, 1716-33. The 3rd and 4th dukes were both Tory politicians. In 1853 the earl of Crawford claimed the dukedom, but his suit before the House of Lords failed. The duke sits in the House of Lords as Earl Graham, a title dating from 1722. His chief seat is Buchanan Castle, near Glasgow, and his eldest son is known as the marquess of Graham.

Montrose, JAMES GRAHAM, 1ST MARQUESS OF (1612-50). Scottish soldier. He succeeded his father

as 5th earl of Montrose, Nov. 14, 1626, and then went to S. Andrews University. His mother was Margaret, eldest daughter of William Ruthven, 1st earl of Gowrie. In 1637 he took an active



1st Marquess of Montrose, Scottish soldier
After Dobson

part in drawing up the National Covenant, but soon found himself in complete antagonism to Argyll and other leaders, and became in Scotland the foremost champion of the crown. In 1644, when the Scots army entered England in alliance with the English Parliament, Scotland not having been hitherto in open rebellion, Montrose obtained a commission as lieutenant-general from the king at Oxford, passed into Scotland in disguise, and raised the well-affected clans of the highlands on behalf of the king, the Scots having set up a government of their own.

At the head of a small force, barely numbering 2,000 men, Montrose, who had been created marquess, conducted in the Highlands a brilliant series of campaigns, winning victory after victory over forces thrice as numerous as his own at Tippermuir, Sept. 1, 1644, Inverlochy, Feb. 2, 1645, and Kilsyth, Aug. 15, where for once he had 5,000 men. This victory seemed to place the lowlands at his mercy, but when he advanced the clansmen melted away, and he had with him less than 1,000 men when he was surprised and his troops were cut to pieces by a superior force under David Leslie at Philiphaugh, Sept. 13.

Finding now that the royalist cause was hopelessly lost, Montrose escaped abroad; but in 1649, when the English Parliament had beheaded Charles I, he resolved on

one more desperate effort on behalf of Charles II. In April, 1650, he landed in Caithness, but few men rallied to his standard, his small force was dispersed at Invercharron, April 27, and he himself was captured and delivered or betrayed into the hands of the Scots government, by whom he was sentenced to be hanged and dismembered as a traitor. The capital sentence was carried out in the Grassmarket, Edinburgh, May 21, 1650. Eleven years later the remains of the "great marquess" were buried in S. Giles's, where a monument was erected in 1888.

Bibliography. *Memoirs of Montrose*, 2 vols., M. Napier, 1856; *Memoirs of James Graham, Marquis of Montrose*, trans. from the Latin of G. Wishart, A. D. Murdoch and H. F. M. Simpson, 1893; *Lives*, Lady Violet Greville, 1886; M. Morris, 1892; Mrs. H. Price, 1912; J. Buchan, 1913.

Mont St. Michel. Village of France, in dept. of Manche. It is built on a steep granite rock about 160 ft. high, in the Bay of St. Michel, about $\frac{1}{2}$ m. from the mainland to which a raised causeway runs. On top of the rock stands the old Benedictine Abbey, and the picturesque effect of the rock crowned with the great church and spire, has made it widely famous.

The abbey, founded by S. Aubert of Avranches in 708, was one of the greatest religious houses of Normandy, and a favourite place of pilgrimage, and became a notable centre of learning. Monks from the abbey of S. Maur replaced the Benedictines in 1622, but the buildings became state property at the Revolution. Under Napoleon III several political prisoners were kept here, but in 1863 it again became a religious house. Since 1874 it has been under the care of the Commission des Monuments Historiques. The church, begun

in the 11th century, has a 15th century Gothic choir and a tower and spire; the 13th century cloisters are of carved granite, and the large building known as La Merveille is also notable. The bay is noted for its dangerous quicksands; much land has been reclaimed on the S. shore near the Mont. Pop. 300.

Mont St. Quentin. Hill and village of France, in the dept. of Somme, $1\frac{1}{2}$ m. N. of Péronne. During the later stages of the Great War they were taken by the French in the spring of 1917; and the height, 345 ft., yielded to the Germans by the British in March, 1918, was gallantly stormed by the 2nd Australian div. on the night of Aug. 31. See Australia and the Great War; Bapaume, Battle of; Somme, Second Battle of.

Montserrat. One of the Leeward Islands, British W. Indies. It is situated in the Caribbean Sea, 27 m. S.W. of Antigua, has a length of 12 m., and a maximum breadth of 8 m.; area about 34 sq. m. Of volcanic formation, it rises in Mt. Chances to over 3,000 ft. It has thermal springs, and at the Soufrière, the highest point on the island, are steam vents and sulphur and gypsum deposits. Well timbered and watered, it produces cotton, limes, sugar, papain, cocoa, coffee, pineapple, oranges, bananas, and other fruits. Lime juice and citrate of lime are manufactured. The chief town is Plymouth. First colonised by the English in 1632, it was occupied by the French for short periods in the 17th and 18th centuries. There are executive and legislative councils. Pop. 12,200.

Montyon, ANTOINE JEAN BAPTISTE ROBERT AUGET, BARON DE (1733-1820). French philanthropist. Born in Paris, Dec. 23, 1733, he became a lawyer, and in 1775 was made a councillor of state.



Mont St. Michel, France. The south-east aspect of the rock, crowned by the Benedictine abbey, seen from the causeway

Emigrating at the outbreak of the Revolution, he remained abroad, mostly in London, until the Restoration, spending large sums of money in helping other emigrés. Re-

turning to Paris in 1814, the following year he reorganized a series of prizes instituted by him before the Revolution. Before his death, Dec. 29, 1820, he bequeathed £400 to each Paris hospital, and similar sums for works to benefit public welfare and ameliorate the condition of the working classes.

Monument. Any considerable work of architecture or sculpture designed to commemorate an act or person important in national or local history. The term also embraces public buildings, official and otherwise, without such historical significance. In Great Britain the Ancient Monuments Protection Act, 1882, constitutes the commissioners of works guardians of a certain number of public monuments, with power to add to the number. Private owners of these

monuments retain all rights, but must not destroy or deface them, and must afford facilities for their inspection to an inspector of monuments and his workmen in event of repairs being needed. There is also a private society for the Preservation of Ancient Buildings. In France there is a state department for this purpose. See Ancient Buildings; Cenotaph.

Monument, THE. Fluted column in London. Of the Doric order, it was completed in 1677, from the design of

Monument, London, from Fish Street Hill

Sir Christopher Wren, to commemorate the Great Fire of Lon-

don, 1666. It stands in Fish Street Hill, a little more than 100 ft. from the site of the house in Pudding Lane where the fire is said to have originated, and is 202 ft. in height. The column contains a spiral stairway of 345 steps of black marble, and is surmounted by a metal urn, 42 ft. high. Edward Pierce was the sculptor of the dragons at the four angles of the base, Caius Gabriel Cibber executed the relief on the pediment, and Dr. Thomas Gale composed the Latin inscriptions. The Monument cost about £14,000. See Great Fire; London Bridge.

Monumenta Germaniae Historica. Collection of documents relating to the history of Germany in medieval times, arranged and edited for the use of students. The work was begun by a society founded by Stein, and the first volume appeared in 1826, G. H. Pertz being the editor. The work was divided into five sections, the most important being that of Scriptores, mainly the old Latin chroniclers, and fresh volumes appeared regularly until 1914, edited and introduced by the leading German historians. Pertz remained in charge until 1874, when the organization was transferred to the Prussian Academy of Sciences.

Monypenny, WILLIAM FLAVELLE (1866-1912). British journalist. Born Aug. 7, 1866, in co. Armagh, Ireland, he was educated at Trinity College, Dublin. Having contributed to *The Spectator*, in 1894 he joined the staff of *The Times*, leaving that paper to become, in 1899, editor of *The Star*, Johannesburg. During the S. African War he was an officer in the Imperial Light Horse. In 1903 he returned to England, and, rejoining the staff of *The Times*, was given the task of writing the *Life of Lord Beaconsfield*. He had completed two volumes when he was taken ill, and on Nov. 23, 1912, he died. The *Life* was finished by G. E. Buckle.

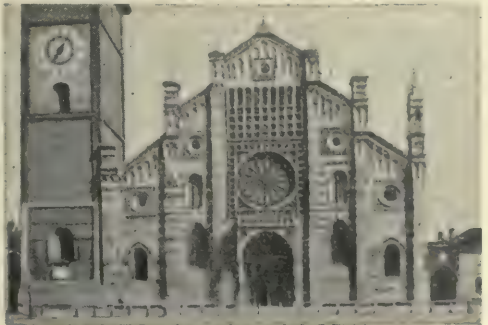
Monza. City of Italy, in the prov. of Milan, the ancient Modicia. It is situated on the river Lambro, 8 m. by railway and tramway N.N.E. of Milan, and was the ancient capital of the Lombard sovereigns. The treasures of the cathedral, founded in 595 by Queen Theodelinda, include the

famous iron crown of Lombardy, with which Charlemagne was crowned in 774 and Napoleon in 1805. The church of San Gerardo is built in the form of a rotunda. The town hall dates from 1293. Felt hats, cotton, silk, leather, etc., are manufactured. Here, on July 29, 1900, King Humbert was assassinated. Pop. 53,200.

Mood (Lat. *modus*, manner) OR **MODE.** In grammar, the form of a verb which indicates the special manner in which an action is regarded. Such are the indicative (simple statement), subjunctive (contingent), imperative (command). The infinitive is not really a mood, but the case of a noun. The subjunctive, so common in other languages, has no distinct form in English, although phrases like "if it be true," "if I were to go" represent the shade of meaning.

Mood. In medieval music, the relations of the large, the long, and the breve. If the two former were involved, it was called greater; if the two latter, then it was called lesser. Either might be perfect or imperfect. In the greater mood perfect, one large equalled three longs; if imperfect, two longs only. In the lesser mood perfect, one long equalled three breves; if imperfect, two breves only. See Time.

Moodkee OR **MUDKI.** Village of the Punjab, India. It is 26 m. S. of the Sutlej on the road from Karnal to Ferozepore. Here, on Dec. 18, 1845, was fought the first battle of the Sikh War of 1845-46. After a long and hasty march, necessary owing to the rapid movements of the enemy, Sir Hugh Gough was unexpectedly attacked by the Sikhs, whose cavalry made a determined attempt to cut off the British line of retreat. A desperate battle ensued, marked



Monza, Italy. Façade of the 14th century cathedral of S. Giovanni Battista, in the Lombardo-Gothic style

by the flight of Gough's native troops, and, owing to the confusion, the firing of one white regiment into another. Eventually the British prevailed, and the

Sikhs, leaving 17 guns behind them, fled. The British lost 900 killed and wounded out of 10,000 engaged. The Sikhs were perhaps 20,000 strong. See Sikh Wars.

Moody, DWIGHT LYMAN (1837-99). American revivalist. Born at Northfield, Mass., Feb. 5, 1837, he



became a business man in Chicago. Later he took charge of a Y.M.C.A.; and, after 1840, in company with Ira D. Sankey (1840-1908) travelled throughout America and Great Britain, holding revival services. His later years were devoted to the founding and organizing of a training institution for lay preachers at Northfield. He published several volumes of sermons and addresses, and was associated with his colleague in the compilation of *Sacred Songs and Solos*, 1873. He died Dec. 22, 1899. See *Life*, W. R. Moody, 1900.

Moody, FANNY (b. 1866). British vocalist. Born at Redruth, Cornwall, Nov. 23, 1866, she

studied in London. Her début was made at Liverpool, where she sang soprano with the Carl Rosa Company in 1887. She quickly became popular, and was for four years



Fanny Moody,
British vocalist
Elliot & Fry

prima-donna at Covent Garden, in addition singing for many choral societies in Great Britain, America, and elsewhere. In 1890 she married Southcote Mansergh, known professionally as Charles Manners, and in 1897 they founded the Moody Manners Opera Co.

Moody, WILLIAM VAUGHAN (1869-1910). American poet and dramatist. He was born at Spencer, Indiana, July 8, 1869, and educated at Harvard. After travelling in Europe he became instructor in English at Chicago University. The first of his poetic plays, *The Masque of Judgment*, 1900, was followed by *The Fire-Bringer*, 1904, and *The Faith-Healer*, 1909. In 1907 his prose play, *The Great Divide*, was produced in New York. He died Oct. 17, 1910, and in the same year was published *Gloucester Moors*. He collaborated with R. R. Lovett in *A History of English Literature*, 1907. See *Some Letters of W. V. Moody*, ed. D. G. Mason, 1913.

THE MOON: ITS ASPECT AND PHASES

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Related articles include those on Astronomy; Planet; Stars; Sun. See also Observatory, Telescope; and the biographies of Halley, Herschel, and other eminent astronomers

The moon is the satellite of the earth. It revolves round the earth in 27.32 days in a nearly circular orbit, at an average distance of 238,800 m., the greatest and least values being 253,000 m. and 221,000 m. Its diameter is 2,160 m., and it shines by reflecting the sunlight. Its apparent changes of shape are due to the different amounts of the sunlit hemisphere that are turned towards us as it revolves. When nearly between the earth and the sun, its dark side is towards us, and it is usually invisible; this is called new moon; when 90° distant from the sun, we see half the sunlit hemisphere; this occurs at first and last quarter. The full moon is opposite to the sun, and appears fully illuminated. The interval between two new moons, a lunation, is 29.53 days; longer than the revolution, since the sun has advanced during the 27.32 days, and the moon requires 2 days more to overtake it. The ordinary year of the Jews and many ancient nations consisted of 12 lunations or 354 days; seven years out of 19 had 13 lunations, the agreement with the solar year being thus approximately preserved.

The moon's path round the earth makes an angle of 5° 8' 40" with the ecliptic, and intersects the ecliptic at two points, the nodes, which have a backward motion, going completely round the sky in 18½ years. When new moon occurs near either node, there is an eclipse of the sun. These eclipses are total only over narrow zones of the earth's surface, but lunar eclipses, which occur when the full moon enters the earth's shadow, are seen over an entire hemisphere. Even when totally immersed in the shadow, the moon generally remains visible, of a coppery hue; the sunlight being bent into the shadow by refraction in the earth's atmosphere.

The Moon and Tides

The moon, the density of which is only $\frac{3}{8}$ of the earth, plays the chief part in causing the tides in our oceans. It attracts every part of our globe, but the parts nearest to it are attracted more strongly than those farther away. A deformation is thus produced in the surface of the ocean. The moon's meridian passage gets later by about 50 minutes each day; the tides get later by about the same amount, but the matter is complicated by the fact that the sun also causes tides. The

actual tide is a combination of the two gravitational forces.

The moon rotates on its own axis in the same time as that of its revolution round the earth, so always turning the same face to the earth. It is without an atmosphere, as proved by observation of the occultation of stars. Prof. Pickering has detected some white deposits in certain regions of the moon, which grow smaller as the sun rises higher upon them; he conjectures that moist vapour issues from the interior, and is deposited as frost, which subsequently melts. The amount of air and water present, however, must be extremely small, and does not justify the statement that the moon has an atmosphere.

Lunar "Seas" and Craters

To the naked eye the surface of the moon shows a number of grey spots; these were called "seas" by early observers, and the name remains, though they are merely plains, covered with some dark material. The chief of these bear the names of Crises, Tranquillity, Serenity, Vapours, Showers, Storms, Clouds, Humours, Nectar, and Fecundity. The volcanic craters are numerous, the larger being fully 60 m. across. A small telescope will suffice to show them, the best time to look being about first quarter, since the shadows are most conspicuous then, and help to throw the surface into relief. Copernicus, one of the grandest, is 56 m. across; the interior is fairly level, but has a few peaks 2,000 ft. high. The ring round the crater is 12,000 ft. high. It is broken into terraces, and has in places a slope of 60°. Copernicus, Tycho, Kepler, and Aristarchus are the centres of wonderful systems of bright rays or streaks, which radiate from these craters, in star-like patterns, often several thousand miles in length. They are most conspicuous in the full moon, and pass indifferently over hill and valley, indicating their independence of these inequalities, and are probably formed of some crystalline substance, extruded from the interior through cracks in the crust.

There are a few continuous mountain ranges on the moon, in particular the Apennines, 460 m. long, well seen after first quarter. The Alps are a smaller range, but interesting from the great valley through them, whose sides are so straight that they might have been



Aspect of the known face of the moon, showing the "seas," lakes, and craters. The chief craters are numbered as follows:—1. Newton. 2. Short. 3. Morena. 4. Clavius. 5. Scheiner. 6. Bacon. 7. Maginus. 8. Longomontanus. 9. Schiller. 10. Schickard. 11. Wilhelm I. 12. Tycho. 13. Stöckler. 14. Hainzel. 15. Walter. 16. Riccius. 17. Furmerius. 18. Piccolomini. 19. Pitatus. 20. Purbach. 21. Sacrobosco. 22. Fracastorius. 23. Petavius. 24. Arsachol. 25. Thebit. 26. Hippalus. 27. Gassendi. 28. Alpetragius. 29. Catharina.

30. Cyrillus. 31. Theophilus. 32. Vendelinus. 33. Langren. 34. Guttemberg. 35. Albategnius. 36. Alphonsus. 37. Ptolemy. 38. Bonpland. 39. Beaumar. 40. Hipparchus. 41. Lelronne. 42. Grimaldi. 43. Flamsteed. 44. Encke. 45. Riccioli. 46. Copernicus. 47. Stadius. 48. Pallas. 49. Pliny. 50. Menelaus. 51. Aristarchus. 52. Oleomedes. 53. Lianaeus. 54. Autolykus. 55. Aristillus. 56. Archimedes. 57. Cassini. 58. Struve. 59. Eudoxus. 60. Aristotle. 61. Plato. 62. Gartner. 63. Eudymion. 64. Atlas. 65. Hercules.

MOON: APPEARANCE OF THE EARTH'S SATELLITE TO A TERRESTRIAL OBSERVER

Based on Nasmyth and Carpenter's Picture Map. By courtesy of John Murray

cleft with a hatchet. There are numerous smaller clefts on the moon, known as rills. Near the crater Thebit is The Straight Wall, with one side 1,000 ft. higher than the other.

The lunar seas were evidently once covered with liquid. Fracastorius, on the border of the sea of Nectar, was once a complete ring, but the wall towards the sea has been destroyed, leaving, however, a mark to show where it stood. Numerous marks of other ruined formations are discernible on the seas. The destroying agency is thought to have been very liquid

lava, either ejected in sudden streams from the interior, or produced by the impact of some large body from outside.

While there is no present volcanic activity on the moon, there is an agency which may produce some changes in it; this is the great difference of temperature between day and night. The rocks in the sunshine probably reach the temperature of boiling water, while at night they reach the cold of space, several hundred degrees below zero. The alternate expansion and contraction may cause the occasional collapse of

steep walls. Thus the crater Linaeus, formerly described as very deep, is now a shallow, whitish depression.

The complex problem of the motion of the moon arises from the action of the sun, whose attraction on the earth and moon is appreciably different. The eccentricity of the orbit, the direction of its major axis, the orbit-plane, are all continually changing. The earth's equatorial protuberance and the planetary attractions also produce appreciable disturbances. Dr. Ernest Brown, after 25 years' work, has completed new lunar



1. Small craters near the hill-girt edge of the Plain of Plato. These volcanic vents exhibit continuous changes, and indicate lunar activity. Frequently obscured by white clouds, they permit the escape of gaseous matter from below the moon's crust. From a model by Bolton

Scriven, F.R.A.S. 2. The crater of Copernicus (No. 46 on previous page), scale 1 in. to 50 miles. 3. The lunar Apennines, Archimedes (No. 56 on previous page), etc., scale 1 in. to 60 miles. 2 and 3 from *The Moon*, J. Nasmyth and J. Carpenter, by courtesy of John Murray

MOON: PHOTOGRAPHS OF MODELS OF CRATERS CONSTRUCTED FROM TELESCOPIC OBSERVATION

tables, which will be used for the first time in the almanacks for 1923, superseding those of Hansen, which have been in use for 60 years, but have now developed appreciable errors.

The procession of the equinoxes arises from the attraction of the sun and moon, especially the latter, on the earth's equatorial protuberance. It is a slow reeling of the earth's axis, causing it to sweep out a circle in the sky, 47° in diameter, in a period of 26,000 years. It was discovered by Hipparchus. It enables us to fix the date when the constellations were mapped out and named (about 2,700 B.C.), that being the date when the south pole occupied the centre of the region left blank by the early observers.

Bibliography. The Moon, R. A. Proctor, 3rd ed. 1886; The Moon, T. G. Elger, 1895; The Moon, Considered as a Planet, a World, and a Satellite, J. Nasmyth and J. Carpenter, 1903; The Moon, W. H. Pickering, 1904; Tables of the Motion of the Moon, E. W. Brown, 1919.

Moon, GEORGE WASHINGTON (1823-1909). British critic and author. He was born in London, June 15, 1823, and privately educated. A man of varied attainments, he was chiefly known for his writings on English grammar and style, beginning with *The Dean's English*, a vigorous criticism of Dean Alford's *A Plea for the Queen's English*. Similar works were *The King's English*, and *Common Errors in Speaking and Writing*. He also wrote religious poems, edited *Men and Women of the Time*, and was the patentee of various scientific inventions. He died March 11, 1909.

Moon, WILLIAM (1818-94). British blind inventor. Born at Horsemenden, Kent, Dec. 18, 1818, he became partially blind as a child and totally blind in 1840. He then devoted himself to teaching blind children at Brighton, using Frere's system of embossed type, but the difficulties of this induced him to invent another system, which he perfected in 1845. To facilitate the publication of the Bible in his type he invented a process of stereotyping which much reduced the cost of production. So successful was his system that he extended it to foreign languages. His wife, born blind, had imagined horses as standing upright on two legs. Moon thereupon produced his pictures for the blind in relief. He died at Brighton Oct. 10, 1894.

Moonlighters. Name given to perpetrators of outrages in the Irish agrarian disturbances of



Moonwort, the two branches of frond

arson, and pillage were frequent, and the Moonlighters instituted a reign of terror which lasted until Balfour's Crimes Act of 1887. See *Coercion Acts*; Ireland.

Moonrakers. Name applied to natives of Wiltshire. It is traced to a story of some countrymen who, seeing the moon's reflection in a pond, tried to rake it out. But another version tells that they were smugglers who, surprised while dragging for hidden kegs of brandy, baffled the excisemen by assuming this simplicity.

Moonstone. Semi-precious stone. It is a translucent, colourless felspar, mostly orthoclase, which is usually cut *en cabochon*, but also faceted. It reflects a bluish milky light, hence its name. It is also known as fish's eye, wolf's eye, and water opal. See Gem.

Moonstone, THE. Novel by W. Wilkie Collins (q.v.), first published in 1868. Turning upon the possession of a wondrous diamond, the highly intricate plot, which abounds in dramatic situations, is developed in the successive narratives of the various parties to the drama, and constitutes one of the most powerful detective stories in the whole range of literature.

Moonta. Township of S. Australia. It stands on Spencer Gulf, 134 m. by rly. N.N.W. of Adelaide, and has carried on copper mining since 1861. Pop. 3,800.

Moonwort (*Botrychium lunaria*). Fern of the natural order Ophioglossaceae. A native of Europe, and the temperate and cold regions of both hemispheres, it has a small tuberous rootstock and fleshy roots. It produces a single annual frond which is divided, one branch bearing a double row of half-moon-shaped leaflets, the other branch having secondary branches which bear rows of leathery spore-capsules, ultimately splitting to release the spores. Formerly it was believed to have the magic power of loosening locks, bolts, nails, etc.

1880-87. Following the rejection by the house of Lords of the Compensation for Disturbances Bill, which was to check evictions and to restrain landlords, a series of outrages took place, usually at night. Murder, cattle-maiming,

Moors. Tract of poor, uncultivated land. In the United Kingdom, moors are chiefly used for the shooting of grouse and other game. Considerable districts in Yorkshire, Derbyshire, and other northern counties of England are moorland, as are the deer forests of Scotland.

Moore, SIR FREDERICK ROBERT (b. 1853). South African statesman. After working in the Kimberley diamond mines, 1872-80, he settled in Natal, and in 1886 was elected to the legislative assembly. Minister for native affairs, with a brief interval, from 1893-1906, he was identified with all movements furthering the self-government of the state, and in 1906 became premier. Attending the 1907 colonial conference of premiers, in 1910 he held, conjointly with the premiership, the portfolio of commerce and industries in the cabinet of South Africa. He was knighted in 1911.

Moore, ALBERT JOSEPH (1841-1893). British painter. Born at York, Sept. 4, 1841, he studied



A. J. Moore, British painter

under his father, William Moore, and at the York School of Design before going to the R.A. Schools in London in 1858. He went direct to nature, sketching in the Lake district and the N. of France. He did much decorative work for churches and other buildings, including mosaic panels for the Central Hall in the Houses of Parliament. In 1883 he painted his masterpiece, *Reading Aloud*. In 1884 he was elected A.R.W.S. His chief pictures include: *Elijah's Sacrifice*, 1864; *The Garden*, 1870; *Blossoms* (Tate Gallery), 1881; *Dreamers*, 1882; *Summer Night*, 1890. He died Sept. 25, 1893.

Moore, FRANK FRANKFORT (b. 1855). Irish novelist and journalist. Born in Limerick, May 15, 1855, he practised journalism in Belfast



and wrote adventure stories for the young; also some verse, *Flying from a Shadow*, 1872, and several plays, before making a hit as

F. Frankfort Moore: Russell

a novelist in 1893 with *I Forbid the Banns*. His gift of bright narra-

tive and character sketching is evident in all his later works, which include *They Call It Love*, 1895; *Nell Gwyn*, 1900; and *The Marriage of Barbara*, 1911. He also wrote *A Journalist's Note Book*, 1894, and *A Life of Goldsmith*, 1910. Among his plays are *Oliver Goldsmith*, 1892, and *Kitty Clive*, 1895.

Moore, GEORGE (b. 1853). Irish author. The eldest son of George Henry Moore, M.P., of Moore Hall, co. Mayo, he was educated in London and Paris, and soon began to write. His earliest published works were volumes of verse, *The Flowers of Passion*, 1877; and *Pagan Poems*, 1881. As a novelist he began with *A Mummer's Wife*, 1885, which, like *Esther Waters*, 1894, was a work of the realistic type. Later works include *Evelyn Innes*, 1898; *Sister Teresa*, 1901; and *The Brook Kerith*, 1916, dealing with the life of Christ. Moore wrote several plays, and was one of the promoters of the Irish literary revival. He was also known as an art critic, on which subject he wrote *Modern Painting*, 1893.

Moore, HENRY (1831-1895). British painter. Born at York, March 7, 1831, he studied under his father, and entered the R.A. Schools in 1853. In 1886 he was elected A.R.A., and in 1893 R.A. A prolific artist and frequent exhibitor, his chief works, paintings of the sea, include *A White Calm*, 1858; *Catspaws off the Land*, 1885 (Tate Gallery); *Clearness After Rain*, 1887; *A Breezy Day in the Channel*, 1888; *Summer at Sea*, 1893. He died at Margate, June 22, 1895.

Moore, SIR JOHN (1761-1809). British soldier. Born in Glasgow, Nov. 13, 1761, he was a son of Dr. John Moore (1729-1802), author of *Zeluco*. Educated at Glasgow High School, he entered the 51st Foot in 1776, and served in America during the War of Independence. In 1794 he was in Corsica, after which he went on an expedition to Santa Lucia. He served against the Irish rebels in 1798, in the Netherlands in 1799, and in Egypt in 1802, by which time his reputa-

tion as a soldier stood very high. Having been knighted, he was, in 1803, chosen to command the troops at Shorncliffe, and it was there that he trained the regiments, among them the 43rd and 52nd, of the light division.

In 1806 Moore was sent to the Mediterranean, and in 1808 he led a division on an abortive attempt to assist Sweden. Returning therefrom he was ordered to Portugal, and was soon in command of the British troops there. Events made it necessary for him to fall back to Corunna, where his men turned and fought the French, Jan. 16, 1809. Moore was mortally wounded and died on the 17th. The circumstances of his burial are known through Rev. C. Wolfe's poem. For six years, 1784-90, Moore was a Scottish M.P. He enjoyed the friendship of Pitt and the duke of York, who, like others in authority, thought highly of his soldierly qualities. His remarkable work in training the infantry makes him one of the creators of the British army. See *Peninsular War*; consult also *Lives*, J. C. Moore, 1834; J. F. Maurice, 1897. *Diary*, ed. J. F. Maurice, 1904.

Moore, MARY. British actress. Born in London, she made her first appearance at The Gaiety under John Hollingshead, but on her marriage with the dramatist, James Albery (1838-89), she retired until 1885, when she appeared at Bradford under the management of Charles Wyndham, with whom she remained for the rest of her career and whom she married in 1916. She accompanied him on his American tours, and was his partner in the Criterion, New, and Wyndham's theatres.

Moore, THOMAS (1779-1852). Irish poet and biographer. Born in Dublin, May 28, 1779, the son of a grocer, he was educated at Trinity College, and came to London in 1799. In London, as elsewhere, his engaging personality and unusual gifts quickly procured for him a large circle of distinguished friends. A volume entitled *Poetical Works of*



John Moore
After Lawrence

the Late Thomas Little appeared in 1801. In 1803 he was appointed registrar of the Admiralty Court, Bermuda, but returned to England after a year, leaving a deputy in charge.

In 1806 appeared his *Odes and Epistles*, which included the Canadian Boat Song. A scathing criticism in *The Edinburgh Review* led to an abortive duel with Jeffrey (q.v.), after which the two combatants became firm friends. In 1807 the publication began of the *Irish Melodies*, with music by Sir John Stevenson, upon which Moore's fame largely rests. Like all his poetry, they are tuneful, graceful, but often artificial and without depth. The *Melodies* brought a fixed income of £500 a year, the brilliant and enormously successful Eastern poem *Lalla*



Thomas Moore
After Sir T. Lawrence

Rookh (q.v.), 1817, brought £3,000, and Moore enjoyed a vogue second only to that of Byron. But the default of Moore's deputy in Bermuda for £6,000 brought financial disaster, and Moore was compelled to seek refuge in Paris till 1822. He returned to London, and at his country house, Sloperton Cottage in Wiltshire, spent the remainder of his life. In 1811 he married Bessie Dyke (d. 1865), an actress.

The great work of the latter part of Moore's life is his biography of Byron, 1830, which, though deficient on the critical side, remains the standard authority. He also issued an edition of Byron's works, and wrote biographies of Sheridan, 1825; and Lord Edward FitzGerald, 1831. He received a literary pension of £300 in 1835,



George Moore,
Irish author



Henry Moore,
British painter
H. P. Robinson, Redhill



Mary Moore,
British actress
Claude Harris

and a civil list pension in 1850. He died Feb. 25, 1852. His *Memoirs*, edited by Earl Russell, appeared 1853-56. See *Poetical Works*, 10 vols., 1840-41; *Lives*, J. Burke, 1879; S. Gwynne, 1905.

Moorfields. London thoroughfare. Between Finsbury Pavement and Moor Lane, E.C., and opening N. out of Fore Street, its name is all that is left of an area once fenland, and more recently known as Finsbury Fields. First drained in 1511, laid out into walks 1606, it was built over in the 18th and early 19th centuries. Bethlem hospital, formerly a convent, stood here from 1676, until its removal in 1815 to St. George's Fields, Lambeth. The old fields are covered by Finsbury Circus and Square.

Moorgate Street. London thoroughfare. Running N. from Lothbury to London Wall and Finsbury Pavement, it was named from a postern gate in the old city wall which opened into Moorfields. The gate was set up in 1415, rebuilt 1472, and taken down in 1762. This street with Finsbury Pavement became Moorgate in 1922. See *Architecture*, illus.; *Finsbury*.

Moor Hen. Alternative name for the water hen (*q.v.*), a common British water fowl.

Mooring Mast. Device for anchoring an airship. It consists of a tall steel mast, to which an airship is fastened by the bow, enabling it to swing in any direction with the wind. Such masts are constructed with lifts to serve as means to load the airship. In the wooden masts passengers and crew ascend by steps. See *Airship*.

Moorings. Arrangement of chains, anchors, or heavy iron blocks, and buoys, to which ships can make fast. They are laid permanently in a harbour. Vessels lying alongside a jetty are said to be moored there.

Moorish Architecture. Term commonly applied to the Hispano-Moresque style developed by the Moorish conquerors of Spain, and illustrated in such buildings as the mosque of Córdoba and the Alhambra at Granada. It formed a distinctive phase of Mahomedan architecture (*q.v.*). See *Arch*.

Moorland. Extensive tract of poor land covered largely with heather, mosses, and peat bog. Large areas of the Pennine chain and the uplands of Scotland are typical moorland. In S. England examples are found in Dartmoor, Exmoor, and Bodmin Moor.

Moor Park. Name of two English parks. One is 1 m. from Rickmansworth, Hertfordshire; the other on the banks of the Wey, 2 m. from Farnham, Surrey. The

first-named was originally enclosed by George Neville, archbishop of York, about 1460. The mansion, of Portland stone, was built in 1673, and reconstructed in 1720. It was bought by Lord Leverhulme, 1919.

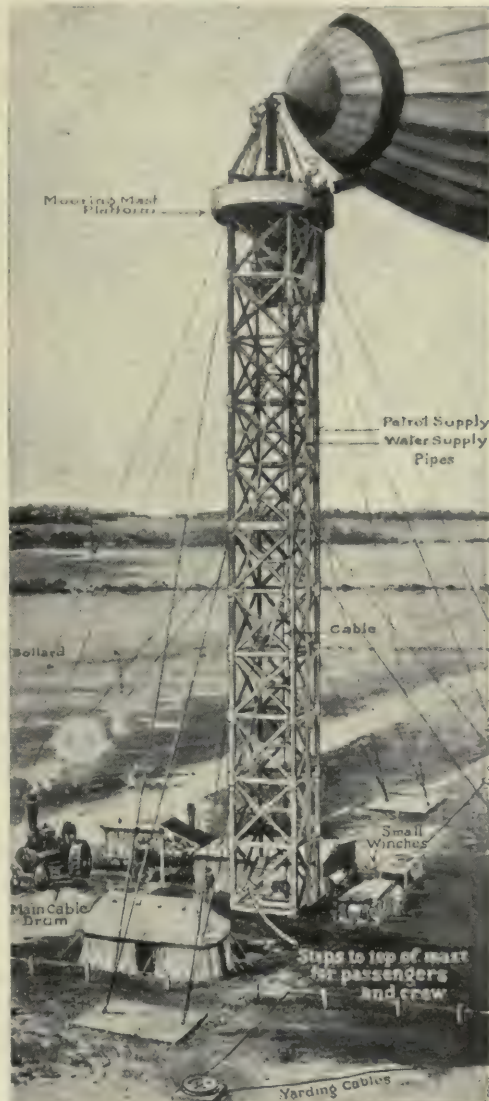
The house and land in Surrey was formerly known as Compton Hall, its name being altered to Moor Park, after the place in Hert-

Moors. Name in popular usage for the Moslem population of mixed Berber and Arab descent in N.W. Africa. The Mauri of the Mauretanian kingdom of Roman writers were Berbers. The Arab irruption of the 8th century which led to the invasion of Spain resulted in some racial blending, and the subsequent return to Morocco of Hispanified Saracens (Moriscos) brought in an Andalusian element. The Arabic-speaking Moor is thus the resultant of many forces, social and ethnic. The name was extended by early Portuguese adventurers to the Arabian settlers upon the coasts of India and Ceylon. See *Morocco*; *Spain*.

Moose (*Alces machilis*). Largest living member of the deer family, distinguished by its size, long pendant muzzle, and broadly palmated antlers. It occurs under the name of elk in Europe; but the name moose is restricted to the American variety, which ranges N. of the Ohio River to the borders of the Arctic regions. Alaska is now its chief home; incessant hunting has made it rare in the less remote forests of North America. A fine male stands nearly 7 ft. high, and weighs over 1,000 lb. It keeps to the more secluded parts of the forest regions.

In the summer it visits the swampy ground near lakes, but in winter resorts to the higher ground. Here it is usually

found in families, consisting of the male and female and the young of the past two seasons; and a "yard" is formed by treading down the deep snow. In the mating season the males are highly dangerous, fight furiously, and are often lured to destruction



Mooring Mast. Pictorial diagram showing details of construction and method of mooring a commercial airship

fordshire, when bought by Sir William Temple about 1682. Here Jonathan Swift, when Sir William's secretary, wrote *The Battle of the Books* and *Tale of a Tub*, and first met Esther Johnson (Stella). The place is also associated with Dorothy Osborne.

by hunters who imitate the cry of the cow moose. Notwithstanding its great size and clumsy appearance, the moose travels at great speed and with curious noiselessness through the densest forests. It is mainly hunted for sport, but its flesh makes good venison, and its hide is converted into leather. *See* Deer; Elk; Ice Age.

Moosehead.

Lake of Maine, U.S.A. The most extensive lake in the New England states, lying on the borders of Piscataquis and Somerset cos., it is irregularly shaped, measures 35 m. by 12 m., and covers an area of about 120 sq. m. The Kennebec issues from the W. side. At an alt. of 1,000 ft. it abounds in fish.

Moose Jaw. City of Saskatchewan, Canada. It stands on Moose Jaw river, 400 m. W. of Winnipeg, and 398 from Calgary, and is served by the C.P.R., C.N.R., and G.T.P.R. It is a railway and agricultural centre with large stockyards and manufactures. Pop. 30,000.

Moot. Literally a meeting, the word being akin to meet. It was used among the Anglo-Saxons for meetings of freemen, and so we hear of folkmoots, shiremoots, and the like, while Witanagemot is another compound. It survives here and there in English in the moot hall. Law students at the Inns of Court call their debates moots. *See* Folkmoor; Witenagemot.

Mopla OR **MAFFILLA.** Mahomedan community, mostly in the Malabar district of the Madras prov., S. India. Numbering 1,046,800, they nominally descend from 7th century Arab immigrants who married Dravidian women. They resisted with fanatical violence the early Portuguese, British, and French settlers. A Mopla rifle regiment, after a brief existence, was disbanded in 1907.

In August, 1921, a serious rebellion of the Moplas broke out in Malabar state. The rebels destroyed railways and looted villages. The treasury at Manjeeri was raided, and several towns, including Calicut, were invested. Over 1,000 lives were lost in the fighting. *See* India, N.V.



Moose. Specimen of the Alaskan moose

By courtesy of the American Museum of Natural History

Mopsus. In Greek legend, the name of two famous soothsayers. (1) The son of Manto, the daughter of Tiresias (*q.v.*) and Apollo. Having built the city of Mallos in Cilicia, together with Amphilochus, the son of Amphiarus, a quarrel arose concerning the possession of it, in which both were slain. Mopsus had oracles at Colophon and Mallos, and Mopsuestia is named after him. (2) One of the Lapithae. Son of Apollo and one of the nymphs, he took part in the voyage of the Argonauts, for whom he acted as seer. He died during the journey from the bite of a snake in Libya.

Moquegua. Maritime prov. of S. Peru. It is bounded S. by Tacna and W. by the Pacific. Traversed by the Andes, whose slopes are fertile and well populated, it produces copper, silver, coal, marble, sulphur, etc.; the vine is widely cultivated. Its area is 5,549 sq. m. Pop. 42,700. Moquegua, the capital is 68 m. by rly. N.E. of the port of Punta Coles on the Pacific, which is connected by rly. Pop. 5,000.

Mora (Lat., delay). Term in Scots law for delay in pursuit of a legal remedy disentitling a person to relief by the courts. *See* Laches; Limitations.

Mora (*Dimorphandra mora*). Forest tree of the natural order Leguminosae, native of British Guiana and Trinidad. It attains a height of 150-200 ft.; its leaves are divided into two rows of leaflets, and the small flowers are combined in dense spikes. The large, woody pods each contain a kidney-shaped seed. The timber is of great value to the shipbuilder, being hard, tough, and close grained like oak, with no tendency to splintering.

Moraceae. Botanical term for the mulberry family, often included in Urticaceae (*q.v.*). *See* Mulberry.

Moradabad. Dist. and town of India in the Rohilkhand division, United Prov. The dist. is situated on the plains E. of the Ganges. The chief crops are wheat and millet. The town is situated on the Ramganga, and has small manufactures in brass and tin. Area, 2,285 sq. m. Pop. dist., 1,263,000; town, 81,200.

Moraine (French). Rock waste accumulated on the surface of a glacier or ice sheet. Lateral moraines are found each side of a glacier, and are formed from the detritus which comes down the valley sides. The uniting of two tributary glaciers produces a medial moraine. Beneath the glacier or ice sheet is the ground moraine or *moraine profonde*, while most of the transport material is piled up into a crescent-shaped terminal moraine at the melting end of the ice. *See* Glacier.

Morality OR **MORAL PLAY.** Early form of the drama, which most probably developed out of the earlier mystery and miracle plays. It is believed to have grown into popularity in the first half of the 15th century. The morality differed from the miracle play in that it was not concerned with the presenting of an established Biblical story with named characters, but was rather a play enforcing a moral truth or lesson by means of personified abstractions. The fact that such personifications appeared in some of the miracle plays suggests that in them may be found the origin of the moralities. Everyman, which allegorises man's life and death, Mankind, Youth, Lusty Juventus, Nature of the Four Elements, Hickscorner, and Magnificence, by John Skelton, are notable examples. *See* Drama.

Bibliography. The Medieval Stage, E. K. Chambers, 1903; English Miracle Plays, Moralities and Interludes, A. W. Pollard, 4th ed. 1914; English Miracle Plays and Moralities, E. H. Moore, 1907.

Morality Play Society. English society founded June, 1911, to produce original Morality, Mystery, and Miracle Plays, and other modern plays of an ideal nature. Its first production was The Soul of the World, by Mrs. P. Dearnier, with music by Martin Shaw, Dec. 1, 1911.

Morane. French aeroplane named after its inventor. In 1910 Morane built a monoplane very similar to the Benoit monoplane of that date. Later, in conjunction with Dr. Saulnier, he built Morane-Saulnier monoplanes which, at the outbreak of the Great War, were amongst the fastest and most manageable, and were used by

both British and French Air Services during the war. The early Fokker, largely used by the Germans, was a copy. In the latter stages of the war Morane developed small high-speed biplanes for fighting purposes.

Morant, Sir Robert Laurie (1863-1920). British civil servant.

The son of Robert Morant, a Londoner, he was born April 7, 1863, and educated at Winchester and New College, Oxford. Appointed tutor to the royal family of Siam, he won the confidence of the king, who



Sir R. L. Morant,
British civil servant
Elliott & Fry

gave him the task of reorganizing the national system of education. Returning to England, he joined the board of education as examiner in 1894. In 1895 he was made assistant director of special inquiries and reports, and he made his reputation by framing the Education Act of 1902. Permanent secretary of the board of education, 1903-11, and knighted in 1907, Morant was selected by Lloyd George in 1911 as first chairman of the health insurance commission, and was made secretary of the ministry of health in 1919. He died on March 13, 1920.

Morar. Loch or lake of Inverness-shire, Scotland. It is 12 m. long, with an extreme breadth of 2 m. In the very W. of the county, its waters are carried to the sea by a short stream. The district around is known as Morar.

Morar. Village of India, in Gwalior state, Central India Agency. It is 3½ m. from the fortress of Gwalior, and was originally a British cantonment.

Morat (Ger. *Murten*). Town of Switzerland, in the canton of Fribourg. It stands on the S.E. side of the Lake of Morat, 18 m. by rly. W. of Berne, and is connected by steamboat and rly. with Neuchâtel. Its old town gate and walls are well preserved, and in its town hall is a unique collection of Burgundian weapons. Its 13th century castle, with a garrison of 1,500 men, resisted the artillery of Charles the Bold for 10 days before the battle of Morat, June 22, 1476, when Charles sustained a disastrous defeat. Morat was taken from Savoy by the Swiss in 1475, and annexed to Fribourg in 1814. The lake has an area of 10½ sq. m., and is connected by the Broye with that of Neuchâtel. On its banks prehistoric dwellings have been found. Pop. 2,400.

Moratella. Town of Spain, in the prov. of Murcia. It stands on an affluent of the river Segura, 40 m. N.W. of Murcia, and 6 m. E. of Calasparra station. Wine and oil are produced, and a coarse kind of cloth, soap, and alcohol manufactured. Pop. 12,700.



Moratella arms

Moratorium (Lat. *mora*, delay). Literally, postponement, a period in which no business engagements can be completed, or debts or other liabilities enforced. In times when a financial panic is feared, a government will sometimes declare a moratorium for a certain number of days, thus giving public confidence a chance to recover. On the outbreak of the Great War in August, 1914, a royal proclamation declared a moratorium of a month for all bills of exchange.

A Postponement of Payments Act gave the government power to declare a general moratorium if the occasion demanded, and the payment of all liabilities, except wages, salaries, rates, taxes, interest, dividends, and small debts, which fell due between Aug. 4 and Sept. 4, was postponed for a month. The three days, Aug. 4, 5, and 6, were declared additional bank holidays, this being in practice a moratorium.

Morava. River of Moravia, also known as the March (*g.v.*).

Morava. River of Serbia. It is formed by the junction of the southern Morava and the western Morava, which occurs near Krushevatz. The S. Morava rises in the height of land stretching E. from the Kara Dag, above Üsküb, partly in Serbia and partly in Bulgaria, from the other side of which flows the Vardar, and its course is N. to its junction with the W. Morava, which rises in the Gotija range, S. of Ushitsee. The combined rivers, known as the Morava, wind N., and fall into the Danube, after a course of about 250 m., near Semendria. The Morava and the Vardar form a great natural sunken corridor in the Balkans from Belgrade to Salonica. The Morava valley was prominent in the Great War. See Serbia, Conquest of.

Moravia. Central portion of the republic of Czecho-Slovakia, formerly the Austrian prov. of Mähren in Austria-Hungary.



Moravia arms

Physically it is separated from the rest of the

republic. Bohemia, on the W., is a plateau which slopes to the mouth of the Elbe, and away from Moravia; Slovakia, to the E., lies within the sweep of the Carpathians. Moravia is almost wholly the basin of the March or Morava, sloping S. towards the basin of Vienna from the Sudetes on the N.W., except in the N.E., where the Moravian Gate, between the Sudetes and the Carpathians, leads N. to Silesia and Galicia. The Thaya valley is roughly the S. boundary, separating Moravia from the republic. The height of land between Moravia and Bohemia averages 1,500 to 2,000 ft., with passes near Iglau and Zwittau. The March is the chief river, for the Oder and the Vistula merely begin within the province; its main affluent is the Thaya, which is fed by the Iglau, Zwittawa, and Schwarzwau.

A quarter of the country is forested, chiefly with pines and oaks. Rather more than half is cultivated, and, the soil being fertile, Moravia was in many respects the most productive agricultural province of the Dual Monarchy of Austria-Hungary. In the S. maize, fruit, and vines; in the centre, wheat, barley, and sugar beet; and in the N. rye, oats, flax, and potatoes are the staple farm products. Cattle are numerous, especially in the Moravian Gate; horses thrive in the centre; goats and merino sheep are numerous. Coal is mined on the Silesian border, W. of Brno, and near Göding; iron ore is mined in the Sudetes. Brno is the capital; other towns being Mährisch Ostrau, Olmütz, Iglau, and Prerau.

The rly. system partially centres on Brno, but in the S.W. and on the E., main lines from Prague and Silesia respectively run to Vienna without touching Brno; the main line between Brno and Prague is not direct, but goes N. through Zwittau.

Before the advent of the Magyar hordes in Central Europe, Moravia was inhabited by Slavs. In the 9th century the people became Christians, at the instance of the Greek missionaries, Cyril and Methodius. Moravia was held by the Czech rulers of Bohemia during the 10th century, and Ottocar II, 1253-78, who had governed Moravia during his father's lifetime, extended the Czech power to the Adriatic. King Matthias of Hungary also ruled over Moravia and Silesia, and was succeeded by Vladislav of Poland, who had been elected to the throne of Bohemia in 1471. After the fateful fight at Mohacs, the Hapsburgs came to power; in 1612 Matthias, who had ruled

Moravia for four years, became king of Bohemia, and Moravia became part of the empire definitely under Hapsburg control. In 1849 Moravia was separated from Bohemia, and made a separate province of Austria. See Czecho-Slovakia; consult also Bohemia and the Czechs, together with Accounts of Moravia and Silesia, W. S. Monroe, 1910.

Moravians or MORAVIAN BROTHERS. Protestant sect, also known as the Unitas Fratrum or Bohemian Brethren. For its descent is claimed from a division of the Hussites at Prague about 1450, which secured episcopacy from a Waldensian bishop in Austria in 1467, but endured much persecution, especially in Bohemia. In 1722 a few families fled from Moravia to Saxony under the leadership of a carpenter named Christian David, and united with a Lutheran community founded by Count Zinzendorf (1700-60) at Berthelsdorf. The community was originally called Bethel and later Herrnhut (the Watch of the Lord); it definitely separated from Lutheranism in 1727, when the title Moravian Brethren was revived. Elders were now elected; and one of them was consecrated as a bishop.

Zinzendorf was banished from Saxony in 1736 on a charge of political intrigue, and spent the rest of his life travelling about Europe and establishing branches of the sect. He visited England in 1737, and for a time had influence with the Wesleys. In 1749 he purchased Lindsey Place, Chelsea, and secured a lease of the site of Beaufort House. The stables were turned into a chapel, and the other premises into a residence for the families connected with it. Later used as an orphanage, it was sold in 1770. An Act of Parliament (22 Geo. II c. 30) was secured by Zinzendorf to exempt Moravians from military service, and Bishop Wilson of Sodor and Man undertook a general supervision of the community. A chapel was opened in Fetter Lane, London, and several branches were established in the country, among them the community at Fulneck, near Leeds.

The sect is said to number about 100,000 adherents; and it had in 1921 in the United Kingdom 45 congregations and preaching stations with 5,539 communicants. Organized in four provinces in Great Britain, North America, South America, and Germany, it is famed for its missionary zeal, having sent out over 2,000 missionaries to the heathen. Its theological position is practically that of the Evangelical Lutherans.

Moray. One of the ancient provinces of Scotland. It included roughly the modern counties of Moray, Nairn, and Banff, and part of Inverness.

Moray or MURRAY, EARL OF. Scottish title borne since 1561 by the family of Stewart. Moray was the name of one of the seven old Scottish earldoms, and early in the 14th century was held by Sir Thomas Randolph, a kinsman of Robert Bruce. After the death of the 3rd Randolph, earl in 1346, it was held by the English prince, Henry, duke of Lancaster, and then by several members of the Dunbar family. A Douglas was another holder, and there were others, but no family held it very long until it came to the Stuarts.

The best known of all the earls of Moray was James Stewart, made earl in 1561. The title passed to his daughter's husband, another James Stuart, and from him to his descendants in turn until the present day. Alexander, the 5th earl (d. 1700), was secretary of state in Scotland before the Revolution of 1689. Francis, the 9th earl, was made a British peer as Baron Stuart in 1796. The earl's eldest son is known as Viscount Doune. *Pron. Murry.*

Moray, JAMES STEWART, EARL OF (c. 1530-70). Scottish noble. An illegitimate son of James V, his mother was Margaret Erskine. He was sent to the university of St. Andrews, and was soon heard of as leading a force that repelled a small French invasion of Fife. He became prominent in Scotland soon after the accession of his half-sister Mary to the throne. A

supporter of the reformed teaching, he joined the lords of the congregation in opposing the queen mother, and, having got military aid from England, brought about the treaty of Edinburgh and the departure of the queen's French auxiliaries. For a time after Mary returned from France, Moray had great influence with her, but a breach soon came, its immediate cause being the marriage with Darnley. Moray was exiled, and



Earl of Moray,
Scottish noble

he was still away when, on Mary's abdication in 1567, he was chosen regent. He was responsible for her defeat at Langside, and he ruled the country, on the whole successfully, until shot as he rode through Linlithgow, Jan. 21, 1570, by James Hamilton of Bothwellhaugh. He was buried in S. Giles's, Edinburgh.

Moray married a Keith, daughter of the 1st Earl Marischal, and left two daughters. His character has been fiercely attacked, especially his conduct towards Mary, but there is no reason to believe that he was more treacherous, avaricious, or hypocritical than other nobles of his times. See Mary, Queen of Scots; Scotland.

Moray Firth. Arm of the North Sea on the N.E. coast of Scotland. It extends inland for nearly 40 m. and has a breadth from Tarbat

Ness to Burghhead of 16 m., but is sometimes said to embrace the whole extent of water between Duncansby Head, in Caithness, to Kinnaird's Head in Aberdeenshire.

Morayshire.

Maritime co. of Scotland, also known as Elginshire. Its area is 488 sq. m., and it has a coast-line of 33 m. on the Moray Firth. The co. is mountainous in the S., where are the Cromdale Hills, with heights exceeding 2,000 ft., but it becomes less so as the low district along the



Morayshire. Map of the maritime county on the east coast of Scotland, also called Elginshire

coast is approached. The chief rivers are the Spey, Findhorn, Lossie, and Divie. There are several small lakes; Lochindorb is the largest; Spynie, having been drained, is but a fraction of its former size. Wheat, oats, and potatoes are grown; cattle, horses and pigs are reared,



Morris county council seal

while there are valuable fisheries. The co. is served by the Highland and G.N. of S. Rly. The chief places are Elgin, the co. town, Lossiemouth, Forres, Rothes, Burghhead, and Grantown-on-Spey. In Aug., 1829, the lower parts of the co. were visited by devastating floods. Together with Nairnshire it sends one member to Parliament. In Jan., 1920, the name of the co. was formally changed from Elgin to Moray. The chief antiquities in the co. are ecclesiastical remains at Elgin, Plusscarden, and Kinloss; ruined castles at Spynie, Lochindorb, and New Duffus; and Sweno's Stone at Forres. Pop. 41,561.

Morbihan. Dept. of France, part of the former prov. of Brittany. With an area of 2,738 sq. m. it has an irregular and indented seaboard on the Atlantic and is contiguous with the depts. of Finistère, Côtes-du-Nord, Ille-et-Vilaine and Loire-Inférieure. Except for the Montagnes Noires on its N. boundary, there are few hills; the Landes de Lanvaux form a barren plateau some 30 m. long, running E. and W. The landlocked gulf of Morbihan and Quiberon Bay, with the Vilaine estuary, are features of the coast; Belle-Île and Groix are the chief islands. The rivers include the lower reaches of the Vilaine, and the Blavet (canalised), Scorff, and Auray; the Canal de Brest traverses the dept.

The generally unfertile soil hampers agriculture, but rye, wheat, potatoes, and some flax are grown. Fisheries, especially of sardines, are important, and industries include tin-working, slate quarries, textile manufacture, engineering and shipbuilding, fish-preserving and oyster culture. The dept. contains many prehistoric remains, cromlechs, dolmens, etc., e.g. at Carnac. Vannes is the capital, other towns being Lorient, Ploërmel, Pontivy, Quiberon, Plouay, Auray, and Hennebont. Pop. 578,400.

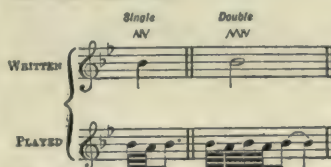
Mordant. Substance used in dyeing to fix the colouring matters in the fibre of textiles. Either before or after using the dye the

fabric is saturated with the mordant, which acts by forming an insoluble compound within the fibres, rendering the colouring matter permanent as regards washing. There are two main classes of mordants: (1) basic, used where acid colouring principles are concerned; and (2) acid, employed for fixing basic colouring matters on cotton.

The chief basic mordants are the metallic salts of aluminium (alum, and aluminium tartrate and sulphate), iron (ferrous and ferric sulphate, ferrous and ferric acetate and ferric nitrate), tin (stannic chloride), and chromium (potassium bichromate). This class of mordants is used for silk, cotton, and wool, whereas acid mordants, of which the chief are tannic acid and sulphated oil, are only employed for silk and cotton goods. In using an alum mordant the wool is immersed in an 8 to 10 p.c. solution of alum with the addition of from 2½ to 5 p.c. of cream of tartar to increase the acidity, and the liquid is brought to the boil and kept at boiling point for half an hour. After cooling, the wool is washed and then transferred to the dye bath. Tannic acid is much used for fixing coal tar colours on cotton. See Dyes.

Mordecai. Character in the O.T. book of Esther. He discovered Haman's plot to exterminate the Jews. See Esther; Haman.

Mordent. Musical ornament or grace. It consists of a brief alternation of the principal note with the note below it:



See Musical Ornamentation, E. Dannreuther.

Mordkin, MIKAIL. Russian dancer. Trained at the school of the Marianski Theatre, St. Petersburg, he made an instant success as partner of Anna Pavlova (q.v.) at the Palace Theatre, London, 1910, when his strong and virile style was seen to advantage in such performances as the Arrow Dance and the Automne Bacchanale of Glazounov. Mordkin appeared also in Paris and the U.S.A.

Mordred OR MODRED, SIR. One of the Knights of the Round Table in the Arthurian legends. In the King's absence Mordred usurped the kingdom, and in the last great battle he is slain by Arthur at the moment that he

gives Arthur his deathblow. In some versions of the Legend he is the lover of Queen Guinevere. See Morte D'Arthur.

Mordvin. People of Finnic stock, mostly in the middle Volga region of E. Russia. Numbering about 1,000,000, besides 33,882 in Siberia and central Asia, they comprise in the S. the dark Moksha, in the N. the blond Erzya. Settled husbandmen and woodworkers, their Finno-Ugric speech is disappearing. Primitive nature-worship survives under a veneer of Christianity. See Finland.

Møre. Fylke or co. of Norway. It is situated between the Dovrefield and the Atlantic, and has a long coast line indented by many fjords, of which the Romsdal, Halse, and Harø are the largest. Most of the area is part of the plateau above 3,000 ft. alt. The chief towns are Kristiansund, Aalesund, and Molde. Fishing is the principal industry. The area is 5,811 sq. m. Pop. 180,000.

More, SIR ANTHONY (c. 1512-c. 1576). Dutch portrait painter. Anthonis Mor, also called Antonio



Sir Anthony More, Dutch painter

Moro, was born at Utrecht, was a pupil of Jan van Scorel, and was influenced by Joost van Cleef. He was admitted to the guild of Utrecht in 1547, and went to Brussels in 1548, to Rome 1550, and in 1552 to Spain, where he became court painter to Philip II. He was in England 1553-54, when he painted a portrait of Queen Mary and was knighted, but returned to the Netherlands and was patronised by the duke of Alva. He died at Antwerp. His chief works are Five Members of the Order of St. John of Jerusalem, 1541; Two Canons of Utrecht, 1544; Maximilian of Bohemia and Mary of Austria, 1552; Philip II and Mary of Parma; and Sir T. Gresham in the Nat. Portrait Gall., London.

More, HANNAH (1745-1833). British author. Born Feb. 2, 1745, at Stapleton, Gloucestershire, she was the daughter of the village schoolmaster. A precocious child, her first considerable work was a pastoral drama, *The Search after Happiness*, 1762. Coming to London in 1774, she became intimate with Garrick, and later with Johnson, Burke, and other literary lights of the time. Garrick produced two of her tragedies, *Percy*, 1777, and *The Fatal Falsehood*,



Hannah More

From an engraving by Heath

1779. She spent her later years in retirement at Cowslip Green, near Bristol, where she wrote *On Female Education*, 1799; and a novel, *Coelebs in Search of a Wife*, 1809. She died Sept. 7, 1833. See *Life*, with *Notices of Her Sisters*, H. Thompson, 1838; *Lives*, C. M. Yonge, 1888; A. M. B. Meakin, 1911.

More, Sir Thomas (1478-1535). English statesman and author. He was born in Milk Street, Cheapside, Feb. 7, 1478. His father John More, became a knight and a justice of the king's bench. His mother was Agnes, daughter of Thomas Graunger. From S. Anthony's grammar school in Threadneedle Street he was admitted, about 1489, into the household of Cardinal Morton. In 1492-94 he was at Oxford, where a pupil of Grocyn and Linaere, filled with enthusiasm for the new learning, he studied Greek, Latin, French, theology, and music, and began his lifelong friendship with John Colet. In London began his friendship with Erasmus, and in 1501 he was called to the bar.

More lectured on S. Augustine's *De Civitate Dei* at S. Lawrence's, Old Jewry, for three years reader at Furnival's Inn, and with a view to holy orders placed himself under the direction of the brothers of the Charterhouse. He secretly wore a hair shirt, fasted much, and each day heard Mass, but gave up the idea of the priesthood in 1503. He became M.P. in Jan., 1504, and continuing his close study of the new learning, was especially influenced by the *Life and Writings of Pico della Mirandola*, a translation of which from the original Latin he published in 1510. He visited Louvain and Paris in 1508, and became bencher of Lincoln's Inn, 1509, and reader,

1511 and 1516. Under-sheriff of London, 1510, while an envoy in Flanders, 1515, he planned his fascinating *Utopia*, 1516.

Regarded with apparent high favour by Henry VIII, he was appointed speaker of the House of Commons, 1523, and staunchly defended the privileges of the House against Wolsey, whom he succeeded as lord chancellor in 1529. An ardent reformer of the school of Erasmus, he took alarm at the course which the Reformation was taking in England. Conscience compelled him to resign the chancellorship in 1532, when Henry claimed to be the one supreme head of the Church of England. Though willing to swear political fidelity to the king, he refused in 1534 to take any oath that should impugn the spiritual authority of the pope. Committed to the Tower, April 17, 1534, and indicted for high treason in Westminster Hall, July 1, 1535, he was executed on July 6, 1535, the king changing the sentence from hanging to beheading. His



Th. More (Th. More Kt)

After Holbein

body was buried in the church of S. Peter ad Vincula, at the Tower. According to tradition the body was reinterred in Chelsea Old Church.

More was twice married, first, in 1505, to Jane Colte, of Newhall, Essex, by whom he had three daughters (Margaret, Elizabeth, and Cicely), and one son (John), and, secondly, about 1511, to Alice Middleton, a widow. His family included also his stepdaughter Alice and an adopted daughter Margaret Giggs. His domestic life is described as his *Utopia* writ large. His house at Chelsea, built 1520, was demolished in 1740. In part of what was once the garden stands the reconstructed Crosby

Hall. In addition to the *Utopia*, More is the reputed author of a *Life of Richard III*; he also wrote a tractate on *The Four Last Things*, and in the Tower his *Dialogue of Comfort*. See *Utopia*.

Bibliography. Il Moro, E. Heywood, 1556; *Life and Writings of Sir T. M.*, T. E. Bridgett, 1891; Sir T. M., W. H. Hutton, 1895, 2nd ed., 1900; *The Utopia of Sir T. M.*, in Latin and English, with Intro., Notes, and Facsimiles, J. H. Lupton, 1895; *The Household of Sir T. M.*, by Anne Manning, ed. with Intro. by W. H. Hutton, 1896; *Great Englishmen of the 16th Century*, S. Lee, 1904; *The Utopia*, with Roper's *Life of More and Some of His Letters*, ed. G. Sampson, 1914; *The Greatest House at Chelsea*, R. Davies, 1914.

Morea, THE (perhaps from Slav. *more*, the sea, or Gr. *moron*, mulberry, from its resemblance in shape to a mulberry leaf). Medieval and modern name for the Peloponnesus, a term by which it has been largely replaced since the liberation of Greece from Turkish rule. See Greece; Peloponnesus.

Moreau, GUSTAVE (1826-98). French painter. Born at Paris, April 6, 1826, he studied at the École des Beaux-Arts, and exhibited at the Salon, 1852. His large painting of a subject from the Song of Songs was purchased by the state for the Dijon Museum. The Athenians and the Minotaur was exhibited, 1855, and Oedipus and the Sphinx at the Salon, 1864. Other important works are: Orpheus, Jason, Golgotha (all in the Luxembourg), Diomed, 1866, Salome, and Hélène, 1880. He died April 18, 1898.

Moreau, JEAN VICTOR MARIE (1763-1813). French soldier. Born Aug. 11, 1763, at Morlaix, the son of a lawyer, he was educated for the law at Rennes, where he made himself notorious by his leadership of the students in their disorders.

In 1790 he joined the revolutionary army, and, coming early to the front, was, in 1793, made a general. He commanded a division in Flanders, after which he led an army into Germany. After some successes he was compelled to retreat, this able performance, however, adding to his reputation. In 1797, suspected as a traitor, he lost his command, but in 1799 he was given a high position with the army in Italy, where he led another masterly retreat.



J. V. Moreau,
French soldier

In 1800 Moreau assisted Bonaparte to overthrow the Directory. He then led an army against the Austrians, ending a successful campaign with the victory at Hohenlinden. After this, partly because of his republican views, he fell under his master's displeasure. He was tried and, although the charge was not proved, was banished for complicity in a plot against Napoleon, and spent the next few years in America. In 1812 he joined the Allied service, and was therein when he was mortally wounded at the battle of Dresden, Aug. 27, 1813. He died Sept. 2. Moreau married a Creole lady.

Morecambe. Mun. borough and watering-place of Lancashire. It stands on Morecambe Bay, 3 m.



Morecambe arms

from Lancaster, and is served by the L. & N.W. and Mid. Rlys. There is a fine promenade, and the attractions include good bathing and fishing. There are two piers, theatre, and two golf courses. Near is Heysham, with a harbour belonging to the Mid. Rly., which has vessels sailing to Belfast, Dublin, Londonderry, and the Isle of Man. Morecambe, having developed from a village, was incorporated as a town in 1902,



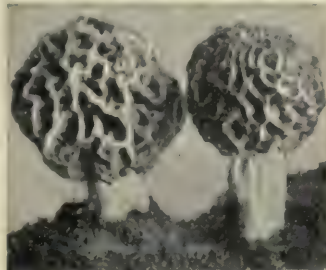
Morecambe, Lancashire. The Crescent and clock tower on the sea front, looking south

and in 1919 was given a separate commission of the peace. Pop. (1921) 19,182.

Morecambe Bay. Extensive inlet on the coast of Lancashire and Westmorland, England. It extends 17 m. inland to the mouth of the river Kent, and measures 10 m. in breadth from the S.E. point of Walney Island to Fleetwood. Besides the Kent, the Lune, Wyre, and several smaller rivers empty into Morecambe Bay. At high tide a bore runs up the river estuaries; at low water much of the area is bare sand, the rivers forming narrow channels which are not permanent.

Moree. Township of New South Wales, Australia. On the Gwydir river, it is 413 m. by rly. N.N.W. of Sydney on a branch with a railhead at Mungindi on the Queensland border. It has medicinal baths and a state experimental farm. Pop. 3,100.

Morel (*Morchella esculenta*). Edible fungus of the natural order Ascomycetes, it is a native of tem-



Morel. Specimens of the edible fungus

perate regions in both hemispheres. It has a short, white, tapering stem, and a swollen head, whose surface is broken into a network of ribs enclosing deep polygonal pits, varying in colour from yellowish, through brown, to olive. Both stem and head are hollow. There are several allied species, equally good as food, one of them, Smith's Morel (*M. crassipes*, var. *Smithiana*) attaining a height of a foot, with a diameter of 7 ins. See Mushroom.

Morelia. City of Mexico. The capital of Michoacan state, it stands in a mountainous district, 6,400 ft. alt., 230 m. W.N.W. of Mexico city by a branch of the National Rly. Its most prominent buildings are the handsome cathedral and the state-house. Chief among its educational establish-

ments is San Nicolas de Hidalgo college, the oldest institution of the kind in Mexico. Cotton and woolen goods, sugar, cigars, cheese, and pulque are manufactured. Founded as Valladolid in 1541, it became the state capital in 1582, and received its present name in 1828 in honour of Morelos, the revolutionary. Pop. 40,000.

Morella. Town of Spain, in the prov. of Castellón. Perched high up in the mts., 36 m. W.S.W. of Tortosa, it is built in the form of an amphitheatre, and girdled by Moorish walls and towers. It was a medieval fortress protecting Valencia against Aragon, and has a



Morella arms

Gothic church, founded in 1317. Blankets and sashes are made. Morella was the chief stronghold of the Carlist Cabrera, who twice defeated the forces of Queen Christina here, in 1838, but it was bombarded and taken by Espartero in 1840. Pop. 6,700.

Morelos. Inland state of Mexico. It is situated immediately S. of the Federal dist. which surrounds the city of Mexico. Mountainous in the N., where the climate is cold, the S. occupies part of the slope of the Mexican plateau, and has a hot climate. The first sugarcane plantations were established here by Cortes, and the sugar industry is still predominant; rice, coffee, cereals, and fruits are grown. Silver, copper, and zinc are mined. Cuernavaca is the capital. Area 2,773 sq. m. Pop. 184,000.

More Pork. Popular name for a species of night jar, *Podargus curieri*. It occurs in Australia and Tasmania, and is so called from the sound of its cry. It is also called frogmouth, in allusion to its large mouth. It is dull grey in colour.

Moresnet. Village and dist. of Belgium. It lies on the E. frontier of the prov. of Liège, 4 m. S.W. of Aix-la-Chapelle, and contains rich zinc deposits, under the Vieille Montagne, or Altenberg, worked by a Belgian company. From 1816-1919 Moresnet was a neutral state, until 1841 under joint Belgian and Prussian administration, and from 1841 onwards, under the government of its own burgomaster and council, the inhabitants making choice of Belgian or German legal rights and military service. The village of Neutral-Moresnet, or Kalmis, was the centre of the state. In 1919 Moresnet was incorporated with Belgium. Pop. 2,850. Pron. Mor-ay-nay.

Moreton Bay. Harbour of Queensland, Australia. It measures 49 m. by 17 m., and is enclosed by the narrow sandy islands of Moreton and Stradbroke. Brisbane River enters it, Brisbane being 25 m. S. of the bay. The neighbouring locality developed into Queensland.

Moreton Bay Chestnut (*Castanospermum australe*). Tall evergreen tree of the natural order Leguminosae, and a native of Australia. It has a smooth bark, and the large leaves are broken into two rows of pointed oblong leaflets. The flowers are at first canary-coloured, becoming a rich scarlet, and hang in loose sprays. The large, oblong, woody pods contain



Moreton Bay Chestnut. Foliage, flower, and fruit of the Australian evergreen

beans, which are said to taste, as they look, like chestnuts, hence the name. The heart-wood is dark-coloured, and is valued by cabinet-makers and turners; but it shrinks considerably in drying.

Moreton Hall. Mansion in Cheshire, England. A Gothic structure, standing in a well-timbered park, near to Congleton, it was built in 1841-43, from designs by E. Blore. The stone used came from the Moreton quarries on Mow Cop, a high hill in the vicinity. The hall was built near to Moreton Old Hall, a black-and-white timbered mansion, with numerous gable ends and notable carved woodwork, dating from 1540. Near by are the remains of Bidulph Hall, a Tudor mansion, 1558, partly destroyed during the Civil War. There is a Moreton Hall near Moreton Morrell, in Warwickshire.

Moretto, IL (1498-1554). Italian painter. Born at Rovato, near Brescia, his real name was Alessandro Bonvicino, and he was a pupil of Ferramola. Influenced by Savoldo, Romanino, Titian, and Raphael, he painted religious pictures and some portraits. In 1521 he was engaged on frescoes with Romanino, in S. Giovanni, Brescia. His other works include Christ with His Cross at Bergamo, 1518; The Ascension, 1526; Martinengo Cesaresco, 1526, in the National Gallery, London; Madonna with S. Cecily, 1540; Christ in the House of Levi, 1542. He was Moroni's master. He died Dec. 22, 1554. His nickname, Il Moretto, means the blackamoor.

Moreuil. Town of France, in the dept. of Somme. Situated on the right bank of the Avre, 8 m. S.E. of Amiens, it came into prominence in the later stages of the Great War, during which it was much damaged. The Germans captured it on April 4, 1918; the wood, 1 m. to the E. of it, was captured on March 29, but recovered by Allied cavalry. The town was recaptured by the French, Aug. 8,

1918. It has a ruined castle, and an abbey church. See Amiens, Battle of; Somme, Battles of the.

Morgan, GEORGE CAMPBELL (b. 1863). British preacher. Born at Tetbury, Dec. 9, 1863, he was educated at Cheltenham, and was for a time schoolmaster in Birmingham. He became a mission preacher, and in 1889 minister of a Congregational church at Stone. After holding similar positions in Rugeley and Birmingham, he moved to London in 1897, becoming minister of a church at Tollington Park, his gifts as a preacher of the evangelical type having made him popular. He was from 1904-17 minister of Westminster chapel, and part of the time principal of Cheshunt College, Cambridge. After 1917 he devoted himself to preaching and lecturing in the U.S.A. and in Great Britain.

Morgan, SIR HENRY (c. 1635-88). Welsh buccaneer. He belonged to a Glamorganshire family,



Sir Henry Morgan, Welsh buccaneer

and, according to tradition, was kidnapped as a youth in Bristol, and sold in Barbados. Later he got to Jamaica, joined the buccaneers, and rapidly rose to leadership. He took part in many daring exploits against the Spaniards in Panama, Cuba, and elsewhere. In 1672 he was sent back to England in disgrace, but won the favour of Charles II, was knighted, and returned to the West Indies as lieutenant-governor of Jamaica, where he died in Aug., 1688. See *Buccaneers of America*, A. O. Exquemelin, 1684, repr. 1891; *History of Buccaneers of America*, J. Burney, new ed. 1907; Sir H. Morgan, *Buccaneer*, J. L. Phillips, 1912.

Morgan, JOHN PIERPONT (1837-1913). American financier. Born at Hartford, Conn., April 17, 1837, he was educated at Boston and Göttingen. Inheriting a large fortune from his father, he joined the banking firm of Duncan Sherman in 1857, and three years later became the American agent of George Peabody & Co., of London. From 1864-71 he was a partner in Dabney, Morgan & Co., and in the



G. Campbell Morgan, British preacher

Russell

latter year of Drexel, Morgan — later known as J. P. Morgan & Co., of New York, which henceforth was the leading financial house in America.

Under him it carried through enormous transactions, and in the U.S.A. financed great railway and shipping schemes. One of the most successful industrial enterprises created by Morgan was the United States steel corporation, or 'steel trust', with a capital of £220,000,000, and he was at the head of the Atlantic Shipping combine. Their firm restored financial stability in the U.S.A. after the panic of 1893. Morgan gave princely donations to Harvard, Yale, and other educational institutions, also to hospitals, churches, etc. In his day he was the world's greatest art collector, and owned priceless pictures, china, and books. Keenly interested in yachting and other sports, he frequently visited Europe, and had a house in London. He died in Rome, March 31, 1913.

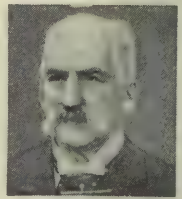
Morgan was succeeded in the supreme direction of his undertakings by his son, John Pierpont Morgan (b. 1867). In addition to controlling the Morgan business interests, he took a leading part in the public life of America. His firm acted as the American agents of the British government during the Great War.

Morgan, LEWIS HENRY (1818-81). American anthropologist. Born at Aurora, New York, Nov.



L. H. Morgan, American anthropologist

21, 1818, he graduated at Union College, 1840; practised law at Rochester, N.Y., and entered the New York senate, 1868. His League of the Iroquois, 1851, inaugurated the systematic study of tribal life. In *Ancient Society*, 1877, he classified human culture into lower, middle, and upper savagery; lower, middle and upper barbarism; and civilization. His *Houses and House-life of the American Aborigines*, 1881, is indispensable for studying the evolution of primitive dwellings. He also wrote *Systems of Consanguinity and Affinity*. He died at Rochester, Dec. 17, 1881. See *Family*.



J. P. Morgan, American financier

Russell

Morgan, Lady Sydney (1783-1859). British novelist. Born in Dublin, the daughter of an actor,



Lady Sydney Morgan,
British novelist

Robert Owen-son, she was for a time a governess. She showed, however, a capacity for writing, and published some poems, but her reputation was made as a novelist. Beginning with *St. Clair*, the best known of her 20 books are *The Wild Irish Girl*, 1806, and *O'Donnell*, 1814. In 1812 she married Thomas, afterwards Sir Thomas, Morgan, a doctor. Her writings deal mainly with Irish life, and she wrote of Ireland in a patriotic spirit; she also wrote about Italy. She died in London, April 14, 1859. See *Autobiography, Diaries and Correspondence*, ed. W. H. Dixon, 1862.

Morgan, Thomas (d. 1743). English writer. About 1700 he became an independent minister at Burton in Somerset, his native county, and afterwards at Frome and Marlborough, but his advanced views led, after a few years, to the loss of his office. He then devoted himself to religious controversy and made a reputation in that capacity, his opinions being akin to those of the Deists. He wrote *The Moral Philosopher*, 1736, and other works on that subject; also *The Philosophical Principles of Medicine*, a subject he had also studied. He contributed many tracts on the Trinitarian controversy, reprinted in book form 1730. Morgan died Jan. 14, 1743.

Morganatic Marriage. Union of a member of a royal or princely family with one of lower rank. The marriage, which was usual in Europe, especially among Teutonic peoples, is binding and the children are legitimate; but they are debarred from succeeding to their father's titles and inheritance, and occupy a position assigned to them by themorganatic contract. These unions are sometimes called left-handed marriages, because the left hand was given in the marriage ceremony instead of the right. The word comes from the German *morgen*, referring to the *morgengabe*, or morning gift formerly made by the husband to his wife on the morning after the marriage night. In Great Britain morganatic marriage, as such, is not recognized, but the Royal Marriage Act requires the consent of the sovereign to the marriage of persons of the blood royal.

Morgan le Fay, Morgain or Morgue. One of the three half-sisters of King Arthur in the Arthurian legends. She is otherwise represented as a fay or fairy, with the power of assuming various forms. Her part in the Arthurian stories varies greatly in the different versions. In Malory's *Morte d'Arthur* she is said to be married to King Uriens of the land of Gore, and to have been one of the three queens who bore the stricken Arthur to the isle of Avalon. In Italian legends her name, *Fata Morgana* (*q.v.*), is given to a mirage in the Straits of Messina.

Morgantown. City of Monongalia, co. West Virginia, U.S.A. It stands on the Monongahela river, which is navigable here, and on two lines of rly. It has manufactures of glass, cigars, etc., but is chiefly known as an educational centre, for here is the university of W. Virginia founded in 1868 by the union of three existing colleges. The town was founded about 1770 by a man named Morgan, was given a corporation in 1785, and made a city in 1905. Pop. 9,200.

Morgarten. Mountain of Switzerland. It stands in the centre of Zug, at the S.E. end of the Lake Aegeri, near Sattel station on the rly. from Zürich to Schwyz. In 1315 trouble arose between the men of Schwyz and the Hapsburgs, the lords of the country. Leopold of Hapsburg collected an army of 15,000 men at Zug and marched towards Schwyz. To reach the town, his men pressed up the lower slopes of Morgarten, where about 1,500 Swiss were waiting for them, Nov. 15, 1315. Boulders and trunks of trees were rolled upon them as they advanced, and in the end they were driven down to the lake. This was the beginning of the struggle that ended in the freedom of the Swiss. A monument marks the site of the battle. See Switzerland.

Morgat. Village of France, in the dept of Finistère. It lies near Crozon on the bay of Douarnenez, 5 m. N. of the Cap de la Chèvre, and is noted as a bathing resort. Pop. 400. See Grotto.

Morgen (Ger. morning). Word used in Scandinavia, Prussia, Holland, and especially in S. Africa as a measure of land. In S. Africa a morgen is about two acres, in Prussia and Scandinavia it is less than one. It is supposed that the word in this sense originated in the amount of land ploughed during a morning.

Morgen, Curt von (b. 1858). German soldier. The son of General M. von Morgen, he was born at Neisse, Nov. 1, 1858, and educated in the cadet corps. He entered

the German army as a lieutenant of infantry in 1878, and was major-general in command of an infantry brigade in 1912. On the outbreak of the Great War he served as one of Hindenburg's generals in E. Prussia and N.W. Russia. In Nov., 1914, he commanded one of the Hindenburg armies that made the second attack on Warsaw and won the battle of Kovno, Nov. 15-16. In 1916 he commanded an army group under Falkenhayn in the Rumanian campaign.

Morghen, Raphael Sanzio (1758-1833). Italian engraver. Born at Florence, June 19, 1758,



R. S. Morghen,
Italian engraver
After P. Caronni

he was instructed by his father and uncle, who were engravers. His first important work consisted of seven plates from the *Masks of the Carnival*, 1778. Sent to Rome as a pupil of Volpato, he engraved Raphael's figures of Poetry and Theology in the Vatican in 1781. In 1787 he produced Guido's *Aurora*. He also engraved *The Last Supper* after Leonardo, *The Transfiguration* and *The Madonna della Sedia* after Raphael, and Van Dyck's *Duke of Moncada*. He died at Florence, April 8, 1833.

Morgue, The. Building in Paris. It is situated behind Notre-Dame, and in it the corpses of unknown persons, mainly those recovered from the Seine, are exposed here on marble slabs, pending identification. Until within the last few years the Morgue was open to the general public. The building, erected in 1864, replaced an edifice with the same name and function built on the Quai du Marché-Neuf at the time of the Revolution. In 1920 it was announced that a new Morgue was to be built on the Quai d'Austerlitz in place of the existing one.

Morhange or Morchingen. Town of Lorraine, France, until 1918 part of Germany. It is 20 m. S.E. of Metz, and gives its name to the battle fought around it in Aug., 1914.

On Aug. 14, 1914, the French armies in Lorraine opened a general offensive, the object of which was to advance down the Sarre valley, turning Metz on the E. flank. The force available was Dubail's 1st army on the right from Donon to a point opposite Sarrebourg, with four corps; and Castelnau's 2nd army from near Sarrebourg to the Moselle, with three corps and a group of three

reserve divisions. The two armies acted independently under the orders of French headquarters. On Dubail's right was Pau's army of Alsace with a total strength of eight divisions. The German forces on this front from right to left consisted of troops from the 5th German army and the Metz garrison, Prince Rupert's 6th army of five corps from Château-Salins to Sarrebourg, and Heering's 7th army in the Vosges, three corps strong. The French had a total of about 24 divisions to 20 or 21 German divisions, or a force of about 470,000 to 400,000 men.

The German strategy in this quarter was to stand on the defensive and draw the French upon a strong and prepared position running from Delme, S.E. of Metz, through Morhange, Benestroff, and N. of Sarrebourg, to the Vosges. Here trenches had been constructed with concrete machine-gun and artillery positions, and barbed wire had been laid. The terrain over which the French would attack had been carefully surveyed and the ranges marked. In fact, the French were about to throw themselves upon a great fortress system, the flanks of which were secured by the permanent defences and heavy artillery of Metz and Strasbourg. At the right moment the Germans proposed to assume the offensive and advance towards the gap of Charmes, where there was a break in the French system of barrier forts covering the eastern front.

The two French armies at the outset advanced without difficulty, pushing back strong rearguards near the frontier. On Aug. 17 the French left entered Château-Salins and the right reached St. Quirin. Next day the French left was S.W. of Morhange and the right entered Sarrebourg. The French now found that they had in front of them a prepared position, strongly held. On Aug. 19 on the right Dubail attacked with only one division in the direction of Sarraltroff, N. of Sarrebourg, but was immediately brought to a standstill by fire from the German entrenchments. On the left Castelnau attacked with the 15th corps towards Benestroff, but was speedily stopped in the same way, and the fire of the German heavy artillery, to which the French field guns could make no satisfactory reply, had an unfortunate moral effect on the French troops. The 20th corps (Foch) on the extreme right attempted without success to advance on Morhange.

Both French generals decided to renew their attack on the 20th. That day Prince Rupert issued the order to his troops, "we must



Morhange. Map showing extent of French advance and German counter-stroke in the battle of August, 1914

now advance; our moment has come." On the extreme right, Dubail was heavily attacked, but gained some ground. Near Sarrebourg, his troops stormed Gosselming, but were then driven back by the fire of the German heavy artillery and by the attack of the German infantry, who recovered Sarrebourg in the afternoon. On the left, where Castelnau attacked with three corps from Bising to Morhange, terrible losses were sustained, as the French infantry assaulted without proper artillery preparation. The 16th corps was forced back from Bising; the 15th corps, attacking towards Benestroff, was heavily repulsed, and then violently counter-attacked. In these operations the Germans made skilful use of their previous minute survey of the whole terrain and their superiority in artillery.

The 20th corps on the left had been ordered to maintain an expectant attitude, but it attacked precipitately, dashing on the German line at Morhange and W. of that place, where, after sustaining a terrific fire, it was counter-attacked by two German corps and driven back to Château-Salins. At the same time the Germans developed a violent attack against the extreme French left flank N. of Nancy, with troops moving from Metz between

the Seille and Moselle. This movement was the more dangerous because, if it succeeded, the French front would be broken and the French troops E. of Nancy in peril of being driven up against the Alsace frontier. Fortunately the Germans were checked, but they bombarded Nomény and destroyed it.

During the battle Dubail received orders from Joffre to send his trains S. of the Meurthe, "in view of grave changes in the general situation in Lorraine and of the possibility of danger to his left flank." He was further instructed not to delay in attempting to defend a front which could be easily penetrated. Thus the limited success which he had gained on his right was of no advantage. Castelnau's army was in extreme danger; some of its divisions had lost half their infantry, and exercising a wise initiative he decided to break off the offensive and carry out an immediate retreat. The French were compelled to retire behind the Meurthe, abandoning Lunéville and an important part of French Lorraine; on Aug. 23, they reached the Grand Couronné positions, covering Nancy with their left, while their centre held the gap of Charmes and their right St. Dié and the Vosges, near the Col de Ste. Marie-aux-Mines. The Germans

claimed the capture of 10,000 prisoners and 50 guns, and they certainly inflicted on their opponents losses larger than they themselves sustained. See *Grande Guerre sur le Front Occidental*, vol. 2, B. E. Palat, 1917-20.

Morier, JAMES JUSTINIAN (c. 1780-1849). British diplomat, traveller.



J. J. Morier,
British diplomatist
After W. Bozall

Member of a family of diplomatists, he was born at Smyrna, held an appointment at the Persian court, wrote books on his travels in Persia, Armenia, and Asia Minor, and a delightful Oriental romance, *The Adventures of Hajji Baba of Ispahan*, 1824. He died at Brighton, March 19, 1849.

Morier, SIR ROBERT BURNETT DAVID (1826-93). British diplomatist. Born in Paris, March 31, 1826, he was educated at Balliol College, Oxford, entered the public service, and in 1853 was sent as attaché to Vienna. There, and in later appointments to various German courts, he became a close student of German politics. In 1876 Morier left Germany on his appointment as minister to Lisbon, moving thence to Madrid, 1881-84. In the latter year he became ambassador to Russia. He died Nov. 16, 1893. Knighted in 1882, he was made G.C.M.G. in 1886.

Mörke, EDUARD (1804-75). German poet. He was born at Ludwigsburg, Württemberg, Sept. 8, 1804, and had already published a novel, *Maler Nolten*, 1832, when in 1834 he became pastor at Cleversulzbach, Württemberg. In 1838 his Poems won him fame. In 1843, owing to ill-health, he resigned his pastorate, and was professor of German literature at Stuttgart, 1851-66. He died June 4, 1875.

Morillo, PABLO (1778-1837). Spanish soldier. Born May 5, 1778, he fought against Napoleon, and in 1815 was sent with an army to S. America to reduce the rebels to obedience. In Colombia and Venezuela he acquired a sinister reputation by his cruelties. He secured possession of Cartagena and Bogotá, but afterwards was defeated by Bolívar and returned to Spain in 1820. In 1823 he submitted to the French and was exiled, but in 1832 he was again in Spain, fighting against the Carlists. He died July 27, 1837.

Morin. Name of two small rivers in France. The Grand Morin joins the Marne near Esbly, and

the Petit Morin rising in the marshes of St. Gond, N. of Fère-Champenoise, joins the Marne at La Ferté-sous-Jouarre. Both were very prominent in the Great War. See *Marne, Battles of the*.

Morina. Genus of perennial herbs of the natural order Dipsacaceae, natives of Asia. They have long, slender, spiny-toothed and opposite leaves, and tubular flowers in whorls above the upper leaves. In the most frequently cultivated species, *M. longifolia*, they are at first white, then pink, later crimson. In *M. coulteri* they are pale yellow.

Morioka. Town of Japan, in Honshu. An island town, on the N.E. rly., 330 m. from Tokyo, it is the prefectural capital of Iwate on the banks of the Kitakami. It contained in feudal times the seat of the Nambu family; Nambu-fuji, or Iwate-san, lies 22 m. to the N.W. It is the centre of an agricultural dist. noted for its horse rearing. Textiles and hardware are the chief industrial products. Pop. 44,000.

Moriscos. Name given to the Moors in Spain after their conquest in 1492. After various measures of persecution and restriction of rights, notably between 1500-25 and under Philip II in 1568, they were finally expelled from Spain under Philip III in 1609-10, with the exception of those who had become Christians, and of the children under four, who were retained and baptized. See *Moors*; *Spain*: *History*.

Morison, JAMES AUGUSTUS COTTER (1832-88). British author. Born in London, April 20, 1832, he passed his childhood in France. He was educated at Highgate School and Lincoln College, Oxford, and became associated with the Positivists. He wrote much for *The Saturday Review* and other periodicals, but ample means made it unnecessary for him to seek a career. His published books include *The Service of Man*, an argument for Positivism; *a Life of S. Bernard*, 1863; *Lives of Gibbon*, 1878, and *Macaulay*, 1882. He died Feb. 26, 1888.

Morison, ROBERT (1620-83). Scottish botanist. Born at Aberdeen, he was educated at the university there, and was intended for the ministry, but abandoned



Morina. Foliage and flower whorls of *M. longifolia*. Inset, single flower

that career to serve against the Covenanters. Dangerously wounded at the battle of the Brigg of Dee, he fled to Paris, studied botany and zoology, and took a medical degree at Angers. About 1650 he received an appointment in the household of the duke of Orleans as one of his physicians and helped in the oversight of his gardens at Blois. He crossed to England with Charles II, who made him his senior physician and botanist. He became professor of botany at Oxford in 1669, and died Nov. 10, 1683. His work in identifying genera and species made him one of the greatest pioneers in classification.

Moriset, BERTHE MARIE PAULINE (1841-95). French painter. Born at Bourges, Jan. 14, 1841, she studied under Oudinot, with whom she painted landscape. Later she met Manet, painted figure subjects under his direction, and married his brother Eugene in 1874. An exhibitor at the Salon from 1864, she joined the Impressionists and exhibited at their first exhibition in 1874. The finest example of her beautiful art, *A Young Girl at a Ball*, is in the Luxembourg. She died March 2, 1895.

Morlaix. Town of France, in the dept. of Finistère. It lies on the river Morlaix, formed by the streams Jarlot and Queffieu, 37 m.



Morlaix, France. Half-timbered houses, dating from the 16th century, in the market place

by rly. E.N.E. of Brest, and 4 m. from the sea. The tidal river allows of a small harbour, and there is trade in grain, vegetables, dairy produce, horses, etc., and a tobacco factory in the town. A branch rly. runs to Roseoff and other coastal villages. The 16th century church of S. Melaine has interesting carvings. Pop. 15,300.

Morlancourt. Village of France in the dept. of Somme. It lies 12 m. W. by N. of Amiens, slightly S. of Albert, and 1½ m. S.E. of Ville-sur-Ancres. Taken by the Germans in their thrust for Amiens in March, 1918, it was the scene of local fighting in May-Aug. of that year until captured in the battle of Amiens, Aug. 8. It has been "adopted" by Folkestone. *See* Amiens, Battle of; Somme, Battles of the.

Morland, GEORGE (1763-1804). British painter. Born in London, June 26, 1763, he was instructed by his father, H. R. Morland, and influenced by George Stubbs, the animal painter. He exhibited many pictures at the R.A. from 1773 to 1804, and at the Society of



George Morland.
British painter

Artists, 1777-82, almost wholly subjects of a domestic nature and country scenes with animals. He painted with great facility, but his loose mode of life involved him in constant financial difficulties, and he died in a sponging-house in London, Oct. 27, 1804. His masterpiece, *The Inside of a Stable*, painted in 1791, is in the National Gallery, London. Others include *Dancing Dogs*, of which 500 engraved copies were sold in a few weeks. *See* Engraving; consult also *Life and Works*, G. C. William son, 1904.

Morland, SIR THOMAS LETHBRIDGE NAPIER (1865-1925). British soldier. Born Aug. 9, 1865, he joined the King's Royal Rifles, 1884, and by 1904 was lieutenant-colonel. Attached to the W. African Frontier Force in 1898, he fought with it in Nigeria, and in 1905 was made its inspector-general. In 1910 he was at the head of the 2nd brigade at Aldershot, and on the outbreak of the Great War was appointed to command the 2nd division of



Sir Thomas Morland,
British general
Langford



George Morland. *Horses in a Stable*; a characteristic example of the artist's treatment of animal life, now in South Kensington Museum

London Territorials, but in Oct. he went to France to take command of the 5th division. He led the 10th corps at the battle of the Somme. He commanded the 13th corps in the final British battles of Nov., 1918, was commander-in-chief of the British army of the Rhine, 1920-1922, and at Aldershot, 1922-23. He died May 21, 1925.

Morlanwelz. Town of Belgium, in the prov. of Hainault. It lies on the river Haine, 15 m. E. of Mons, and is a busy industrial town with foundries and rly. workshops, and coal mines in the neighbourhood. The Germans occupied it during the Great War. Pop. 8,200.

Morley. Mun. borough of Yorkshire (W.R.). It is 4 m. from Leeds, with stations on the G.N. and L. & N.W. rlys. S. Peter's church is modern, and there is a modern town hall. The industries include the manufacture of woollen goods. H. H. Asquith was born here. Mentioned in Domesday, Morley was a village until the industrial developments of the 19th century. It became a corporate town in 1885. Near is Howley Hall, long the seat of the Saviles. Market days, Fri. and Sat. Pop. (1921) 23,935.

Morley, ARNOLD (1849-1916). British politician. Born Feb. 18, 1849, the fourth son of Samuel Morley, M.P., merchant and philanthropist, he graduated at Trinity College, Cambridge, and was called to the bar at Lincoln's Inn in 1873. M.P. for Nottingham, 1880-85, he

gained further experience by acting as counsel for the home office. From 1885-95 he represented E. Nottingham, being chosen chief



Arnold Morley.
British politician
Elliot & Fry

whip of the Liberal party, then in opposition, in 1886, and in 1892 he entered the Cabinet as postmaster-general. In 1895 he lost his seat for E. Nottingham, and made no further attempt to enter Parliament. He died Jan. 16, 1916.

Morley, HENRY (1822-94). British man of letters. Born in London, Sept. 15, 1822, the son of a doctor, he was educated at Neu-wied, Germany, and King's College, London. He settled in London in 1851, and became associated with Household Words, All the Year Round, and The Examiner, of which he was editor, 1859-64. In 1865 he became professor of literature at University College, and in 1878 filled a similar position at Queen's College. He was principal of University Hall, Gordon Square, 1882-90, and died May 14, 1894.



Henry Morley,
British author
W. & D. Dowsney

Generally sound in his criticism, he was an excellent teacher. He edited several libraries, including Morley's Universal and Cassell's National, which did a great deal



Morley arms

to popularise literature, and was author of a series of volumes on English writers down to Shakespeare, 1887-95; *A First Sketch of English Literature*, 1873, new ed. 1912; *Lives of Palissy*, 1852;

Jerome Cardan, 1854; Cornelius Agrippa, 1856, and Clement Marot, 1871; *Journal of a London Playgoer*, 1866; and *Memoirs of Bartholomew Fair*, 4th ed. 1892. See *Life*, H. S. Solly, 1898.

VISCOUNT MORLEY

John Derry, Editor & Journalist

See the articles on Morley's contemporaries in both politics and literature, e.g. Asquith; Campbell-Bannerman; Gladstone; Greenwood; Stead. See also *Home Rule*; *Journalism*; *Liberalism*; *Mill*; *Rousseau*; *Voltaire*

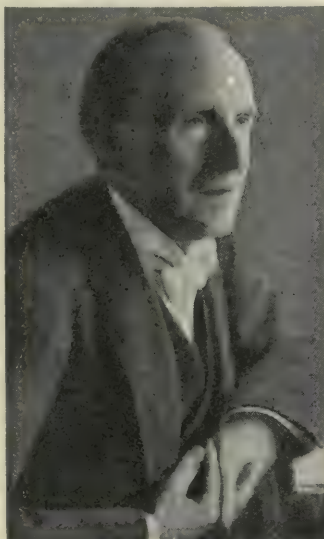
John Morley was born at Blackburn, Dec. 24, 1838, the son of a surgeon. Educated at Cheltenham and Lincoln College, Oxford, by the time he was in his twenty-second year he had taken his degree and was editing a dying literary journal, *The Literary Gazette*, in London, and studying for the bar. In due time he was called, but never practised. For seven or eight years he had a miscellaneous experience of literary life in London, and then, in 1867, made his mark by publishing his first book, *Burke: A Historical Study*, showing his interest at once in literature and politics, and Burke remained one of the ruling influences of his life. In that year, too, he succeeded George Henry Lewes as editor of *The Fortnightly Review*, a position he retained for more than sixteen years. From 1868-70 he edited *The Morning Star*.

In the 'seventies, between his editorship of *The Morning Star* and his editorship of *The Pall Mall Gazette*, Morley made his way into the first rank of the writers of the period by his finely balanced studies of the great literary Frenchmen who immediately preceded the Revolution—*Voltaire* 1872, *Rousseau* 1873, and *Diderot* and the *Encyclopaedists* 1878. During this period he was writing for *The Fortnightly* brilliant studies of French statesmen, such as *Robespierre* and *Turgot*, and also of English writers—*Carlyle*, *Macaulay*, *Emerson*, *Mill*, *George Eliot*, and others—and these well-weighted estimates, published as *Critical Miscellanies*, were supplemented until they filled four volumes.

On Compromise

During the same fruitful ten years an essay, *On Compromise* (1874), won definitely for the writer a place among English philosophers, a form of distinction strongly supported by the tone of his historical studies, which always suggested a search for the fundamental principles of public policy. Late in the 'seventies Morley was engaged on a *Life of Cobden*, published in 1881, and had projected and was editing the invaluable, if

unequal, series of critical sketches, *English Men of Letters*, published by Macmillan and Co., whose literary adviser he had become. His own volume in the series, *Burke*, was published in 1879. His studies, in the same firm's *Statesmen*



Haine

John Morley

Series, have had as their subjects *Walpole*, 1889, and *Cromwell*, 1900.

From 1880-83 Morley undertook the editorship of *The Pall Mall Gazette* as a Liberal organ, his chief assistant being W. T. Stead, and his second assistant Alfred Milner, afterwards Viscount Milner. It may be questioned whether any newspaper has ever exercised so great an influence over leaders of opinion as *The Pall Mall* exercised during this period. The consequence was the entry of Morley into parliamentary life as member for Newcastle-on-Tyne in 1883. He then severed his connexion with *The Fortnightly* and *The Pall Mall*.

In three years he was a member of the cabinet as chief secretary for Ireland, and he continued to hold cabinet rank, whenever the Liberals were in power, until his

final retirement in 1914 on the eve of the Great War. As the most trusted lieutenant of Gladstone, he was again Irish secretary, 1892-95. From 1896-1908, when he was created Viscount Morley of Blackburn, he represented Montrose Burghs in Parliament. On the return of the Liberals to power, he was secretary of state for India, 1905-10, and lord president of the council, 1910-14.

When the Order of Merit was instituted in 1902, Morley was made one of the original holders of the distinction, and from 1908 was the chancellor of the Victoria University of Manchester. From 1895 he was engaged on the most monumental of his works, the *Life of Gladstone*, 1903—a great historical, biographical, and popular success. Besides the Order of Merit, Morley received many and varied honours. Many of the universities conferred honorary degrees upon him, and Oxford made him an honorary fellow of All Souls. In 1894 he was appointed a trustee of the British Museum, and in 1891 a bencher of Lincoln's Inn. In 1902 Andrew Carnegie presented to him the valuable library he had bought from Lord Acton's executors, and this Morley handed over to Acton's own university, Cambridge. His *Recollections*, published in 1917, was avowedly his *Nunc Dimittis*. By the glimpses it gave of confidential politics, and its undiminished literary grace, it charmed all readers. He died Sept. 23, 1923.

Statesman and Speaker

As journalist, author, and statesman Viscount Morley won and kept universal regard and personal trust, even when he was an advocate of unpopular causes. A critic of imperial expansion, particularly in Egypt and South Africa, in an age of expansion, when the British hold on both Egypt and South Africa became consolidated, he was heard with respect by those who differed from him most; a constant supporter of Irish self-government, he was never subjected to the bitterness of feeling that so long surged around that question. That was because his reasoned sincerity defied misunderstanding. The commonest criticism of him was that his doctrinaire attitude, received from John Stuart Mill, lacked the adaptability which must accompany practical action.

As a speaker Morley never had the casual ease of the glib platform orator, but his personality was always impressive; and in the rare moments when he spoke his most intimate thoughts, he moved his audiences perhaps more deeply than they were moved by any man

of his generation. It was in one of these moments that he declared the central purpose of his life to be "to make more men happy, and happy in a better way."

As a writer his style is studiously balanced, never overloaded or tawdry, never monotonous, but carrying without effort a full freight of thought, and capable of rising on occasion into a moving eloquence. Late in his life, when his main work was done, he adopted with a fine effect a graceful familiarity, and softened in men's minds the impression of a somewhat austere virtue which his harping on stern principles had created. *See* *Collected Works*, 15 vols., 1920; *British Political Leaders*, J. McCarthy, 1903; *John Morley and other Essays*, G. M. Harper, 1920.

Morley, SAMUEL (1809-86). British merchant and philanthropist. Born in London, Oct. 15, 1809, the son of a hosiery manufacturer, he was educated at private schools, and entered the family firm of I. and R. Morley, of which in 1855, on the retirement of his brother, he became the sole owner. Under his guidance it became the largest of its kind, with several factories in and around Nottingham, and branches all over the world.

Morley was a strong Nonconformist, and was for years the leading layman among the Congregationalists, being a most generous supporter of that cause, as well as of others. In 1865 he entered Parliament as M.P. for Nottingham, but in 1866 he was unseated on a petition against his return. In 1868 he was chosen Liberal M.P. for Bristol, and he remained in the Commons till 1885. His politics centred mainly round his dislike of an established Church. He was eager to remove the disabilities of the Nonconformists, and greatly interested in education and temperance, but being a practical business man, he was also a useful member when commercial matters were under discussion. He died Sept. 5, 1886, having refused a peerage. Morley was at one time a proprietor of *The Daily News*, and for some years a member of the London School Board. In 1912 his eldest son, Samuel Hope Morley, was made a peer as Baron Hollenden.

Morley, THOMAS (1557?-c. 1603). English composer. A pupil of William Byrd, he studied music at

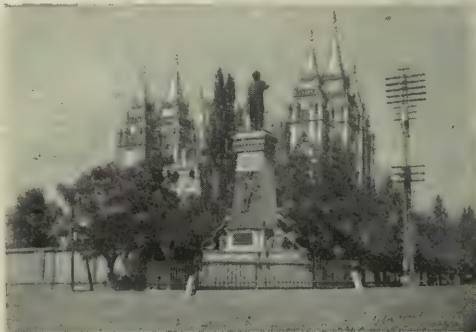
Oxford, and in 1592 was made a gentleman of the chapel royal. He was at one time organist of St. Paul's Cathedral, and in 1598 secured a monopoly for the issue of song books. He composed many ballets, madrigals, and canzonets for voices as well as a instrumental music, his outstanding piece being the music to *It was a Lover and His Lass*, in *As You Like It*. His *Plaine and Easie Introduction to Practicall Musicke*, 1597, was the first treatise of this kind published in England.

Mormal. Forest of France in the dept. of Nord. It covers 38 sq. m., and lies W. of the river Sambre, between Valenciennes on the N. and Landreies on the S. It was prominent in the Great War, the British after their stand at Mons retreating on the W. and E. sides of it, and the Germans making a forced march through it to surprise the British at Landreies (q.v.). Thereafter it remained in the possession of the Germans until its W. border was reached by the British 3rd and 4th armies in Oct., 1918, and by November 5 the whole of the forest had been cleared. *See* Sambre; Valenciennes.

Mormon, Book of. Scriptures of the Mormon Church, purporting to be a translation of an alleged revelation to Joseph Smith. In 1827 Smith asserted that under angelic guidance he had discovered these scriptures engraved on a number of gold plates which, by Divine assistance, he professed himself able to translate. The work appeared in 1830, and is a curious story of the prehistoric inhabitants of N. America, couched in an imitation of Biblical phraseology and full of anachronisms, many of which were corrected in subsequent editions. Smith asserted that the original was written in "reformed Egyptian" characters and in a dialect of Hebrew, which he was able to translate by looking through two crystals which he called Urim and Thummim.

The Book of Mormon was first published for the "translator" by E. B. Grandin of Palmyra, N.Y., in 1830. Many editions have been published in English; and it has been translated into many other languages. The original MS is in the custody of Frederick M. Smith, of Independence, Mo., U.S.A.

Mormons. Usual designation of a religious sect founded in U.S.A. under the title of The Church of Jesus Christ of Latter Day Saints. The origins of the Mormon religion are to be found in the life of Joseph Smith, upon whose alleged



Mormon Temple at Salt Lake City, Utah, showing statue of Brigham Young in foreground

revelation their tenets are based. Having produced the Book of Mormon (q.v.) and communicated his "revelations" to his friends, in 1830 he formally organized the Church of which he was the presiding elder. There were five other members present, and from these six arose the organization of the Church of Latter Day Saints. The earnestness of its founders, and their advent at a time when religious revivals were stirring people throughout the New England states, caused the movement to spread rapidly. From the beginning a great feature of Mormonism was the sending out of missionaries, and by the close of the year many converts had been baptized. The doctrines of the Church at that time are described under the article *Mormons, Reorganized*.

In 1831 the Church moved to Kirtland, Ohio, where a temple was built, and the saints, as they styled themselves, fully intended to settle. The inhabitants, however, resented their intrusion, disliked their doctrines, and finally insisted upon their departure. Ever moving westwards, the headquarters of the Church were transferred in 1838 to Far West, Missouri. In a very short while persecution once more broke out, Smith and others were charged with treason, and when they escaped, the Church moved to Commerce, Illinois, which they renamed Nauvoo. Things were better for a while, the city grew rapidly, and it seemed as though Zion had been reached. All this while missionaries had been busy in Europe, especially in England, and the stream of immigrants steadily increased. It was, how-

ever, in the midst of this prosperity that Joseph Smith received his fatal "revelation" on polygamy, 1843. At first he and those to whom he communicated the revelation refrained from announcing it to the world; some of the missionaries, indeed, whilst stoutly denying the truth of the rumours which had rapidly gone abroad, were secretly polygamists.

Amongst the Mormons themselves there was great opposition to the doctrine, and in 1844 plurality of wives was denounced in a Nauvoo paper. The indignation of the Gentiles, as the Mormons called their neighbours, was intense, and they resolved to drive the Mormons out by force. In the commotion which ensued Joseph Smith and his brother Hyrum, who were in gaol on a charge of treason, were dragged out and shot. After much irresolution, Brigham Young was elected first president and, amidst the confusion in their own ranks and the bitter hatred of their neighbours, the Mormon Church would have fallen to pieces had it not been for his able though unscrupulous management.

In 1846, under his guidance, the whole Church began the migration westward, and in July, 1847, the first party reached the Great Salt Lake, near which they decided to build their city. Crops were planted, houses were built, yet another temple erected and over all Brigham Young ruled with a rod of iron. The population continually increased with immigration, and in 1852 numbered over 25,000. In that year the polygamy revelation was published and the Reorganized Church broke away. Young had been trying to obtain the recognition of the Salt Lake settlement as a state, under the name of Deseret, but the publication of the revelation was fatal to his hopes. The Territory of Utah was organized instead, and Young was made governor; but he so misused his power that troops were sent to uphold government authority and the Mormon War broke out in 1857. There was, however, little friction with the troops; Young gave in and never afterwards set himself so resolutely against the Federal power.

From 1862 onwards the U.S. government did its utmost to suppress polygamy, but with little success until, in 1882, the Edmunds law was passed, disfranchising all polygamists and convicting nearly 500 persons of unlawful cohabitation. Brigham Young had died in 1877, and in 1890 the president of the Church, Wilford Woodruff, published a manifesto advising his followers "to refrain from contract-

ing any marriage forbidden by the law of the land." On the condition that no plural marriages should thenceforward take place, Utah was, in 1896, made a state. Ostensibly polygamy was abandoned, but in 1903 Joseph Fielding Smith (1838-1918), grandson of the "prophet" and president of the Church, admitted on oath that since 1890 he had lived with his four wives who had borne him children. On Smith's death in 1918 the presidency was given to Heber J. Grant, himself a polygamist.

The doctrines of the Utah Church, as distinguished from those of the Reorganized Church, are baptism for the dead, and celestial marriage. The latter doctrine, which is so closely associated with the popular conception of Mormonism, teaches that, whereas death dissolves all earth-made marriages, a celestial marriage is for eternity, and women who are "sealed" to a man are his in heaven where, the greater the number of wives and children, the greater the glory. Moreover, as later teaching unfolded, the more children that are begotten, the more bodies are formed for the reception of incarnate spirits.

In the Court of Common Pleas, Lake City, Ohio, it was decided in 1880 that the Reorganized Church was, so far as property was concerned, the legal successor and continuation of the Church founded by Joseph Smith, but the main body has always remained in communion with Brigham Young and his successors, in 1919 the numbers being, Brighamites, 403,391, and Reorganized, 58,941. **A. L. Hayward**

Bibliography. History of Salt Lake City, E. W. Tullidge, 1886; The Founder of Mormonism, a Psychological Study of Joseph Smith, I. W. Riley, 1902; The Story of the Mormons, W. A. Linn, 1902; Scientific Aspects of Mormonism, N. L. Nelson, 1904; The Mystery of Mormonism, S. Martin, 1920.

Mormons, THE REORGANIZED. Church of Latter Day Saints. After the death of Joseph Smith in 1844 a number of the Mormons, distrusting Brigham Young and refusing to acknowledge his election to the presidency of the Church, established in Zarahemia, Wisconsin, the Reorganized Church of Jesus Christ of Latter Day Saints, 1851-52. In 1860 they were joined by Joseph Smith, the "prophet's" eldest son, who became president. Repudiating the later doctrines of polygamy and baptism for the dead, they held to the original tenets of the Church, which may be thus summarised.

By reason of the apostasy from the primitive doctrines of the

Christian Church, the authority to administer in the ordinances of the Gospel was lost. This authority was restored to earth by angelic administration in 1829 and 1830, and men were set apart to serve in the various grades of the priesthood. These men and their successors in the work taught the principles of the Gospel, including those enumerated in the epistle to the Hebrews; faith, repentance, baptism by immersion in water, laying on of hands (for the healing of the sick, conferring of the Holy Ghost, ordination, and blessing of children), etc. As a result, it is claimed that the promised gifts and powers of the gospel are enjoyed by the faithful; including the gifts of prophecy, revelation, healing, visions, tongues, etc. The "Saints" look forward to the second personal advent of Christ. Another ideal is that of a people gathered and educated in righteousness, equal in all things temporal and spiritual. The present headquarters of the Church are in Independence, Missouri, U.S.A. See History of the Church of Jesus Christ of Latter Day Saints, H. C. Smith, 1901.

Morning. Early part of the day, the part before noon, i.e. before 12. The word *morrow* was at first synonymous with morning, as in the phrase good *morrow*, but it is now used for the following day. A morning gift was one given to a bride by her husband on the morning after marriage. See Day; Time.

Morning Advertiser, THE. London morning newspaper and organ of the Licensed Victuallers' Association. It was established Feb. 8, 1794. Under the editorship (1850-71) of James Grant, it was one of the first of the London papers to accept Reuter's telegrams. Lord Brougham and Sir David Brewster were among its early contributors, and its editors have included Captain Hamber, Col. Alfred B. Richards, and Hamilton Fyfe. In 1854 it led a campaign against the Prince

Consort, and later it was a vigorous opponent of the policy of W. E. Gladstone.

Morning Glory (*Ipomoea purpurea*). Major Convolvulus of the seedsman. A twining, climbing herb of the natural order



Morning Glory. Spray of foliage and flower

Convolvulaceae, it is a native of tropical America. The leaves are heart-shaped, alternate, and without teeth, the flowers large and funnel-shaped. See *Convolvulus*.

Morning Leader, *THE*. London daily newspaper. Started, May 23, 1892, from the office of *The Star*, it was incorporated with *The Daily News*, May 12, 1912.

Morning Post, *THE*. London's oldest daily political newspaper. Established by Henry Bate, Nov. 2, 1772, as *The Morning Post* and *Daily Advertiser*, and edited by him from 1775-80, its early contributors included Lamb, Coleridge, Southey, Wordsworth, Sir J. Mackintosh, Arthur Young, and Mackworth Praed. In 1795 it was acquired by Peter and Daniel Stuart for £600. It passed into the hands of the Cromptons, paper manufacturers, in 1849, when Peter Borthwick became first manager and then editor, being succeeded in 1852 by his son Algernon, afterwards Lord Glenesk, who became proprietor in 1876. The latter bequeathed the proprietorship to his only surviving daughter, who in 1893 married the 7th earl Bathurst. It was sold to a group of Conservatives in 1924.

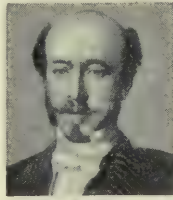
Its editors have included Sir William Hardman, 1872-90; Algernon Locker, 1895-97; J. Nicol Dunn, 1897-1905; Fabian Ware, 1905-11; and H. A. Gwynne. The later success of the paper dates from the reversion in 1881 from 3d. to its original price of 1d., but during the Great War it was raised to 2d. See Lord Glenesk and *The Morning Post*, R. Lucas, 1910.

Mornington. Village of co. Meath, Ireland. It stands on the Boyne, 2 m. from Drogheda. From it the family of Wesley, or Wellesley, to which the duke of Wellington belongs, took the title of earl, still held by the duke. Richard Colley, M.P., who took the name of Wesley on succeeding to some estates, was made baron Mornington in 1746, and his son Garret was made an earl in 1760. The 2nd earl was the statesman known as the Marquess Wellesley.

Mornington is the name of the largest of the Wellesley Islands, Queensland. It is situated at the S. end of the gulf of Carpentaria. Another Mornington is a watering-place of Victoria. A third Mornington is a suburb of Dunedin.

Morny, CHARLES AUGUSTE LOUIS JOSEPH, DUC DE (1811-65). French statesman. He was born in Paris, Oct. 21, 1811, being, it was supposed, an illegitimate son of Hortense, queen of Holland, and so half-brother to Napoleon III. Entering the army, he became a

cavalry officer in 1832, and, known as the comte de Morny, served in Africa. In 1842 he was elected



Duc de Morny.
French statesman

deputy for Clermont-Ferrand, as a supporter of the government. He took part, however, in the coup d'état of Dec. 2, 1851, and became Napoleon III's first minister of the interior. He was president of the Corps Législatif from 1854 onwards, fulfilled a mission to Russia, 1856, and was made duke in 1862. He wrote several vaudeville pieces, under the pseudonym of M. de St. Rémy. He died in Paris, March 10, 1865. See *Frère d'Empereur: le duc de Morny et la Société du Second Empire*, F. Lolié, Eng. trans., 1910.

Moro (Spanish, Moor). Mahomedan people in the Philippine islands. Numbering 277,500, one half are in Mindanao, the other mostly in Palawan and the Sulu archipelago, with offshoots on the Borneo coast. Mainly of Indonesian stock, already Moslemised when they arrived prior to the Spanish conquest, they betray Arab admixture, and were formerly addicted to piracy.

Morobe. Town of New Guinea, formerly Adolph Haven in German New Guinea. Situated on the

shore of Hercules Bay in the narrow E. portion of the island, it is one of the chief harbours.

Morocco. Country of Africa, since 1912 a protectorate of France. It lies W. of Algeria, with a coastline along the Mediterranean Sea and the Atlantic Ocean.



Morocco arms

The High, Middle, and Anti-Atlas ranges cross the country N.E. from Agadir, the highest areas exceeding 15,000 ft. in elevation. The Rif, a much lower range, flanks the N. coast. The parallel ridges of the Atlas form part of the great system of fold mountains which stretches discontinuously across the world from N.E. India and includes the Alps and Apennines; for this reason N. Morocco is physically European in character, and Africa may be said to begin at the edge of the Sahara. Perennial streams, the Moulouya (Muluya) and Sebou (Sebou), drain the N. slopes. S. is the Sahara, and the S. streams, Ziz, Dra, Guir, terminate on the desert edge. The S. side of the Sebou valley is forested.

Agriculturally and commercially the country is in a state of transition. Colonisation by Europeans is actively encouraged, and experimental gardens and nurseries have been established by the authorities. The cultivation of



Morocco. Map of the North African protectorate of France, with coast lines on the Atlantic and Mediterranean

barley and other crops is being extended. In the Sebou valley there are thousands of acres of vineyards under native tillage; European vineyards have prospered near Casablanca. There are extensive orchards of olive, fig, orange, lemon, palm and almond trees. Tunny and sardines are caught in Mediterranean waters. Copper, lead, antimony, silver, gold, and petroleum occur, and iron ore is exported from the Spanish zone. Cotton goods and sugar are the principal imports; barley, eggs, and wool being the chief exports. Trade is almost entirely with France and Algeria, with the latter both by sea and land; the United Kingdom supplies about a quarter of the imports. Nearly half the shipping at Moroccan ports flies the French flag.

Railways connect Morocco City with Casablanca, Rabat, Meknes, Fez, and Oudja, beyond which a short extension of 9 m. makes a junction with the rly. system of Algeria. A narrow gauge line connects Ceuta with Tetuan. Roads, many of which are suitable for motor traffic, connect the large towns and are being extended rapidly; a main coast road joins Kenitra to Mogador.

Morocco was a Roman province, called Mauretania. Throughout the Middle Ages it was in the hands of Mahomedan invaders, who used it to obtain reinforcements for the Moorish conquests and occupation of Spain. After the Moors were expelled from Spain in 1492, the Spanish Moors and Jews were a source of strength to Morocco. In 1577 both France and England had accredited representatives in the country, and Tangier was occupied by the English, 1662-84. French penetration of the country led to the Conference of Madrid in 1880, when the powers drew up a code defining the status and rights of foreigners. French progress in Algeria led to an active participation in Moroccan affairs, and in 1904 England gained a free hand in Egypt by granting the same privilege to France in Morocco.

Spanish fears were pacified by the establishment of the Spanish zone, but Germany intervened in 1905 and prevented the acceptance by the sultan of the reforms proposed by France; this led to the Algeiras Conference, 1906, where the way for French control of Morocco was opened. In 1911 France and Spain were occupied in military occupations, the German Manneemann brothers were intriguing in the S., and the German warship Panther appeared at Agadir and precipitated a crisis, as a consequence of which France pur-

chased the right to protect Morocco by concessions of territory adjacent to German Cameroons.

The sultanate of Morocco was formerly an independent state, being the last of the Barbary empires. In 1912, however, the sultan accepted the protectorate of France, and by the Franco-Spanish treaty of the same year the country was divided into three areas with different adminis-



trations. Tangier and dist., about 140 sq. m. in area with 60,000 inhabitants, was made a special zone; the N. coast area became a Spanish zone, about 11,000 sq. m. in extent, with about 550,000 people, ruled from Tetuan by a Khalfa selected by the sultan and controlled by a Spanish high commissioner; the remainder was left to the sultan controlled by a French resident-general. The sultan's capitals are Fez, Morocco City, and Rabat. The latter is the chief seat of government and contains the main residence of the resident-general, who has, however, residences at the other capitals and at Casablanca. The French area contains 220,000 sq. m. and 5,500,000 people. The precise system of administering the zone of Tangier was settled by a convention, 1923. (See Tangier, N.V.)

In that year both France and Spain were engaged in the pacification of their respective spheres. Marshal Lyautey (q.v.), the French resident-general, arrived at Taza in April to organize a campaign against the dissident tribesmen of the Beni-Warain, and in the Wazanf region. In June of that year Spanish troops were successful against Raisuli, but in July, 1921, they suffered a severe reverse in the Melilla zone. At Sidi Dris and elsewhere heavy defeats were ex-

perienced. A column under General Navarro was cut off at Monte Arruit and destroyed after a stout resistance. General Silvestre, the commandant-general, and thousands of troops were killed at Anual, and in August Melilla was invested by the tribesmen. The Spanish government took energetic measures to retrieve these disasters. A policy of pacification was later followed, and by 1924 conditions were more settled. The former mismanagement caused the military coup in Spain, 1923. See Africa; N.V.

Bibliography. The Khalifate of the West, D. Mackenzie, 1911; Morocco, P. Loti, 1914; Le Maroc, A. Bernard, 4th ed. 1918; La France au Maroc, B. Georges-Gaulis, 1920; Morocco That Was, W. B. Harris, 1921.

Morocco (Arabic, *Marakesh* or *Marrakesh*). City of Morocco, the S. capital of the country. It is situated on the N. end of a fertile



Morocco. Prominent features of the city. 1. Kasba gate in the city walls. 2. Kutubia mosque

plain, about 4 m. S. of the river Tensift. It is surrounded by a wall, and contains many ancient but dilapidated buildings and several notable mosques, including the Kutubia. The sultan's palace stands outside the walls and covers about 200 acres. Standing within easy reach of the Atlas Mts. and commanding the trade routes to the S., its commerce was important, and it is still the centre of a large trade. The chief industries are connected with leather-working, tile-making, pottery, and iron-working. Pop. 120,000.

Morón de la Frontera (anc. *Arumi*). Town of Spain, in the prov. of Seville. It is picturesquely placed on the Guadaira river, 32 m. S.E. of Seville, with which it is connected by rly. An old fortress town at the base of the Sierra Morón, it is dominated on the E. by a castle-crowned eminence, formerly a Moorish stronghold. The castle was destroyed in 1812. Olive oil is the chief product. Cattle are reared, and near by are marble and chalk quarries and iron mines. Pop. 17,100.

Moroni, GIAMBATTISTA (c. 1520-78). Italian painter. Born at Bondo, near Bergamo, he studied

under Il Morretto at Brescia and was influenced by Lorenzo Lotto. He died at Bergamo. Feb. 5, 1578. His paintings of religious subjects are of small importance, but his portraits attained a very high level and had some influence on Van Dyck. The most notable are the Portrait of a Tailor, and the Portrait of a Lawyer, both in the National Gallery, London, which possesses five other examples of his work.



Giambattista Moroni,
Italian painter

Morpeth. Mun. bor. and market town of Northumberland. It stands on the Wansbeck, 17 m. from Newcastle, and has a station on the N.E. Rly. The church of S. Mary dates from the 14th century, and the grammar school from the 16th. Of the castle only the gateway survives. There is a town hall, a gaol, and, in the main street, a clock tower. At Newminster, near the town, an abbey was established in the 12th century, and there are remains of other old buildings in the neighbourhood. The industries include brewing, malting, and tanning, and the making of bricks and tiles, while in the neighbourhood are extensive collieries. It is a rly. junction. An important cattle fair is held. The town grew up around the castle, held at one time by the Dacres. It was incorporated in 1662, and is now governed by a mayor and council. Until 1918 Morpeth was separately represented in Parliament, the parliamentary borough including Blyth. Market day, Wed. Pop. 7,800.



Morpeth arms

Morpheus (Gr. *morphē*, form, shape). In Greek mythology, the son of sleep and god of dreams.

Morphia OR **MORPHINE**. Alkaloid contained in opium, of which it is the active principle. It is used in medicine, and is also given to relieve pain or to induce sleep, being either swallowed or injected under the skin. The habit of taking morphia to relieve insomnia is a dangerous one, and excessive doses produce poisoning and death. Emetics, movement, and artificial respiration are serviceable antidotes to morphia poisoning. Mor-

phia was first isolated in 1816 by the German chemist Sertürner, and forms crystallised salts soluble in water. Under the Dangerous Drugs Act, 1920, its import and export were prohibited except under licence of the home office. *See* Opium.

Morphology (Gr. *morphē*, form). Science of the form and structure of plants and animals. *See* Botany, Embryology; Histology.

Morphy, PAUL CHARLES (1837-84). American chess player. Born in New Orleans, June 22, 1837, his father, Alonzo Morphy, was a lawyer of Spanish extraction. He was educated at a Jesuit college in Alabama and became a lawyer, but before this he had made a reputation as a chess player. His father was a keen player, and the son showed remarkable skill at the game, defeating the



P. C. Morphy,
American chess
player



Morpeth, Northumberland. Market place, looking towards the old clock tower

Valentine

leading players in New Orleans before he was twelve years old. In 1857 he won the first prize at the American chess congress, and for the next two or three years he was in Europe. In 1864 he returned to the U.S.A. and his wonderful brain gave way. He died in New Orleans July 10, 1884. By some Morphy is regarded as the greatest chess player of all time, and Morphy's Games of Chess, ed. J. Löwenthal, 1860, is still the classic of the game. *See* Exploits and Triumphs of P. Morphy, F. M. Edge, 1859.

Morris, EDWARD · PATRICK MORRIS, 1ST BARON (b. 1859). British politician. Born at St. John's, Newfoundland, May 8, 1859, he was educated at S. Bonaventure's college there and at Ottawa University. He was admitted as a lawyer and began to practise at St. John's, but gave much time to politics, and in 1885 was chosen M.P. for St. John's in

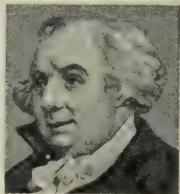
the Newfoundland legislature. In 1889 he entered the Liberal cabinet, and from 1890-95 was attorney-general. In 1897, as a result of the controversy over the railway contract given to Sir R. G. Reid, Morris left his party and became the leader of the independent liberals. In 1900 he entered Bond's cabinet, being minister of justice, 1903-7. In 1908 he became leader of the people's party, and from 1909-18 was premier of Newfoundland. In 1918 he was made a baron. He wrote for this Encyclopedia the article on Newfoundland. *See* Portrait Gallery of Contributors.

Morris, SIR DANIEL (b. 1844). British botanist. Born at Loughor, Glamorganshire, May 26, 1844, he was educated at Cheltenham, the royal college of science, S. Kensington, and Trinity College, Dublin. In 1877 he became assistant director of the Botanic Gardens in Ceylon, where he investigated the nature of the coffee-leaf disease. In 1879 he was made director of the botanic department of Jamaica, and in 1886 became assistant director of the gardens at Kew. He retired in 1898 and was knighted in 1903.

Morris, GOUVERNEUR (1752-1816). American statesman. Born at Morrisania, his father's estate in New York, Jan. 31, 1752, he was descended from one of Cromwell's soldiers who had emigrated to America in 1660. His father,

Lewis Morris (1698-1762), was a New York judge, his mother was of a Huguenot family, hence his Christian name. He was educated in New York, and became a lawyer.

Entering public life just when the trouble between Britain and her American colonies began, Morris



Gouverneur Morris,
American statesman

was a member of the congress of his own state, and of that called by the seceding states as a whole. Until 1783 he was continually employed in the cause of the Americans. He was chairman of the committee that discussed the possibilities of reconciliation with the British representatives in 1778. A prominent member of the con-

vention of 1787, his speeches influenced the nature of the amended constitution, the final form of which he drafted.

In 1789, when the French Revolution broke out, Morris was in Paris, and he remained in Europe until 1798, acting for two years as minister to the French republic, and at other times reporting privately on European affairs to Washington. From 1800-3 he was a member of the Senate, and was afterwards chairman of the Canal Commission. He died Nov. 6, 1816. His *Diary and Letters*, published in 1888, give an account of the outbreak of the French Revolution. See *Lives*, J. Sparks, 1832; T. Roosevelt, 1891.

Morris, Sir Lewis (1833-1907). British poet. Born in Carmarthen, Jan. 23, 1833, he was descended from the Welsh poet and antiquary Lewis Morris (1700-65). Educated at Sherborne School and Jesus College, Oxford, he won the university prize for an English essay and



Sir Lewis Morris,
British poet
Elliott & Fry

became a barrister. It was whilst practising that he made a name as a poet with the first series of *Songs of Two Worlds*, 1871. In 1876-77 appeared *An Epic of Hades*, which was followed by *Gwen*, a dramatic poem, 1879; *Songs Unsung*, 1883; *Gycia*, a tragedy, 1886; *Songs of Britain*, 1887; and *The New Rambler*, 1906. He was active in promoting education in Wales. Knighted in 1896, he died Nov. 12, 1907.

Morris, Margaret. British dancer and educationist. A follower of the ideals of Hellenic dancing as taught by Raymond and Isadora Duncan, she became principal of the Margaret Morris School of Dance, Chelsea, London. Her educational theory was based on a synthesis of the arts, and dancing, painting, design, singing, musical composition, and dance notation all form part of the general scheme.



Margaret Morris,
British dancer
Elliott & Fry

Morris, Thomas (1821-1908). Scottish golfer. Born at St. Andrews, Fifeshire, June 16, 1821, he began to play golf at six years of age. In 1851 he took over the

links at Prestwick and superintended the laying out of this course. It was while he was at



Thomas Morris, senr.,
Scottish golfer

Prestwick that the Open Championship was inaugurated in 1860. This was won by him in 1861, 1862, 1864, and 1867. Morris superintended the laying out of the courses at Westward Ho!, Luffness, Dornoch, Tain, and Muirfield. In 1863 he was made custodian of the Royal and Ancient Golf Club at St. Andrews. On the occasion of



William Morris
By courtesy of Emery Walker

his 75th birthday a subscription was raised to buy him an annuity, which resulted in £1,250 being subscribed. He retired in Sept., 1903, and died May 24, 1908. See *The Life of Tom Morris*, W. W. Tulloch, 1907.

His son, Thomas Morris, junior, born at Prestwick, 1851, won the open championship belt outright by winning it thrice in succession, 1868-70, and won the open championship trophy again in 1872. He died Dec. 25, 1875.

Morris, William (1834-96). British poet. He was born March 24, 1834, at Walthamstow, the son of a prosperous bill-broker, also William Morris. He was educated at Marlborough College, from where he went to Exeter College, Oxford. Attracted by the High Church movement, he intended to take orders; but at Oxford he rapidly

passed to a deeper interest in the arts and crafts, and the making of poetry. He met Burne-Jones, and both worshipped Rossetti from afar. Thus it came that both men, rebelling like the pre-Raphaelites against Greek academism in art, and against the Renaissance, went back to the Italian primitives and the Gothic, not realizing that the mimicry of the Gothic was just as academic as mimicry of the Greeks. Morris, fascinated by the life of the Middle Ages, spent his vigorous years in trying to replant on modern life a dead thing. More profitable, however, was his championship of the social aims of the people.

Becoming possessed of an income of £900 a year on coming of age, Morris chose art as his career instead of the Church. After his literary venture, *The Oxford and Cambridge Magazine*, he came up to London and articulated himself to Street, the architect, at whose office he met his lifelong friend, Philip Webb. Soon thereafter he met Rossetti, but the rugged personality of Morris was too marked to become utterly enslaved; and, while Rossetti urged him to paint pictures, Morris kept a keener interest in architecture and the beautifying of things in common use. Thus early he revealed his life-thought. Just as he weighed the prosperity of a people by the state of its poor, not of its rich, so he judged the art of an age by its craftsmanship, rather than by its genius in easel-pictures. He made one great blunder, misled by Ruskin, in attacking machine-made things, instead of demanding fine craftsmanship and good design in machine-made things.

Morris took rooms with Burne-Jones at 17, Red Lion Square, where he began at once the art revolution by designing furniture. In 1857 he took part in Rossetti's decorating of the debating hall of the Oxford Union with tempera paintings from the *Morte d'Arthur*, work which was soon wrecked by the decay of the material; it was Morris's foreground of sunflowers that started the much-chafed badge of the Aesthetes. In April 1859, Morris married the beautiful Jane Burden. Desiring an ideal home, and finding an orchard and meadow on Bexley Heath, in Kent, he there engaged Philip Webb to build him the famous Red House that was destined to revolutionise the home throughout the land; for the difficulty of getting furniture to suit it led to the foundation of the firm of Morris & Co., which undertook the beautifying of everything, from the wallpapers and

stained-glass windows and furniture to the cups and saucers, dishes and dog-irons.

Illness soon compelled Morris to move to town; and, selling the Red House, he settled in an old house in Queen Street, Bloomsbury, in 1865. Morris was now able to devote his time to poetry again, and composed his epic, *The Life and Death of Jason*, 1867, *The Earthly Paradise*, a series of tales from Greek and medieval sources, 1868-70, and *Love is Enough*, 1872, and was soon in the front rank of the great poets of his generation. In 1871 Morris, with Rossetti, took the beautiful old house in the Thames valley called Kelmscott Manor House. The very charm of the place made him fret over the sordid lives of the workpeople. He wrote a translation of Virgil's *Aeneid* in 1875, the year of the break-up of the Morris firm and also of his friendship with Rossetti.

In 1871 he went to Iceland; in 1873 to Italy; and, bored by the Renaissance, back to Iceland again. In 1878 Morris went to live in his picturesque house at Hammer-smith Mall on the river's edge. He had translated the *Volsunga* saga with Magnusson in 1870; in 1876 appeared his *Sigurd the Volsung*. About 1877 Morris stepped

Wood Beyond the World, *The Well at the World's End*, *The Water of the Wondrous Isles*, and *The*



Sundering Flood. He died Oct. 3, 1896. See Art; Kelmscott Press; Pre-Raphaelites. **Haldane McFall** *Bibliography*. Works, 24 vols., 1910-15; *The Books of W. M., H. B. Forman*, 1897; *A Study in Clough*, Arnold, Rossetti and Morris, A. Stopford Brooke, 1908; *Lives*, A. Vallance, 1897; J. W. Mackail, 2 vols., 1899; A. Noyes, 1909; A. Clutton-Brock, 1914.

Morris Dance (Span. *morisco*, Moorish). Popular dance, said to have been acquired from the Moors perhaps on the return of John Gaunt from Spain in the reign of Edward III. In Tudor times it was well established in England as a festival dance, especially on May day, and references to it abound in English literature. Stock characters figuring in the dance around the maypole were Maid Marian (*q.v.*), frequently impersonated by a man,

Some of the tunes are named after their places of origin or usage, such as the *Staines Morris*, beginning:

Morrison. Mt. of Formosa, the highest point in the Japanese Empire. The peak, whose alt. is variously given as 13,075, 13,800, and 14,272 ft., is the culminating point of the Niitaka range, the S. portion of the mountainous backbone of the island. The Japanese name is Niitaka-yama.

Morrison, ARTHUR (b. 1863). British novelist. Born Nov. 1, 1863, he became a clerk in the civil service, devoting time also to writing. In 1890 he left the service to write for *The National Observer* and do other journalistic work. His reputation was made with his vivid stories of life in the east end



Morris Dance. A figure in the old English dance, performed by the Polesworth (Warwickshire) Dancers. Above, sword dance, and boy riding a hobby horse

into the arena of politics to prevent England from interfering over the Bulgarian atrocities. He was soon in the van of the Socialist movement—a movement which, as he maintained, by revolution alone could rid the privileged classes of economic power; in 1883 he publicly declared this position.

Of Morris's prose romances, the best-known are *the Dream of John Ball*, 1888, and *News from Nowhere*, 1891. Having mastered tapestries, Morris turned to printing. In 1888 he decided to print his prose romance *The House of the Wolfings*, and in 1889 *The Roots of the Mountains* in his Kelmscott Press. Then followed other prose romances, *The Glittering Plain*, *The*

her paramour, her jester, Friar Tuck, a gentleman, clown, Bavarian fool, hobby-horse, and foreigners, perhaps *Moriscos* or *Moors*.

The music used for Morris dancing differs in various parts of England, and there seems to be a good deal of freedom in using old popular song tunes as well as the few undoubtedly genuine Morris tunes. The majority of the tunes are in 2-4 or 4-4 time, but 6-8 and 3-4 are not unknown. The oldest recorded Morris tune is found in *Arbeau's*, or *Tabourot's Orchésographie*, 1589, and runs as follows:



of London, *Tales of Mean Streets*, 1894, and *A Child of the Jago*, 1896. Later novels include the detective stories, *Adventures of Martin Hewitt*, 1896; *Cunning Murrell*, 1900; *The Red Triangle*, 1903; and *Green Ginger*, 1909. An authority on Oriental art, Morrison also wrote *The Painters of Japan*, 1911.



Arthur Morrison, British author
Russell



G. E. Morrison, British journalist
Elliot & Fry

Morrison, GEORGE ERNEST (1862-1920). British journalist. Born at Geelong, Victoria, the son of Dr. G. Morrison, principal of Geelong College, he was educated at Melbourne University. In 1882

he shipped as an ordinary seaman to the South Sea Islands to investigate the traffic in natives, writing a series of articles on this evil to *The Melbourne Age*. Then he journeyed to New Guinea, where he was badly wounded in an encounter with natives. After recovery he studied medicine at Edinburgh, taking his degrees in 1887. Further travels followed, and then, returning to England, he became associated with *The Times*.

In 1897 Morrison proceeded to Peking as resident correspondent for *The Times*, and in 1900 took an active part in the defence of the legations during the Boxer rising. He represented his paper at the triumphal entry of the Japanese into Port Arthur, sending the first authoritative account of the Russian surrender, and at the Portsmouth peace conference, 1905. In 1907 and 1910 he made long journeys across China. Up to 1912 his telegrams and letters were a feature of *The Times*. In that year he became political adviser to the first president of the Chinese republic. He died at Sidmouth, May 30, 1920. His published works include *An Australian in China*, 1895.

Morrison, ROBERT (1782-1834). British missionary. He was born at Morpeth of Scottish parentage,



Jan. 5, 1782, and in 1807 was sent by the L.M.S. as a missionary to Canton. Two years later he became an official translator

Robert Morrison

to the East India Company. He translated the Bible into Chinese, prepared a grammar and dictionary, and was the founder of the Anglo-Chinese College at Malacca. He died at Canton, Aug. 1, 1834.

Morrison. River of Ross-shire and Inverness-shire, Scotland. It rises near Loch Cluny and falls into Loch Ness at Invermorriston in Inverness-shire. Its length is 19 m. The beautiful district through which it flows is known as Glen Morrison. Morrison is also the name of an industrial suburb of Swansea, at one time a separate village. It has a station on the G.W. Rly. and is 2 m. from the town proper in a N.E. direction. See Swansea.

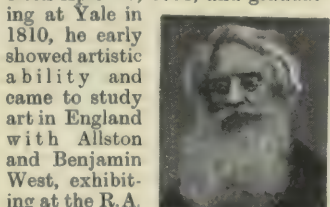
Morristown. Town of New Jersey, U.S.A., the co. seat of Morris co. On the Whippany river, 22 m. by rly. W. of Newark, it is served by the New Jersey and

Pennsylvania and other rlys., and is largely a residential district for New York business people. In the neighbourhood is one of the largest hospitals for the insane in the U.S.A. Settled about 1710, Morristown was incorporated in 1865. Twice during the Revolution it was the headquarters of Washington. Pop. 12,500.

Morris Tube. Mechanical arrangement which permits of small bore cartridges being fired from a rifle of larger calibre. It thus provides a means whereby practice with the weapon may be obtained at short ranges and at much less cost than if the full sized ammunition were used. It consists of a rifled steel tube which is fitted inside the barrel of the rifle. In the British army it was widely used with the service rifle, until it was displaced by the miniature rifle. See *Musketry; Rifle*.

Morrow, GEORGE (b. 1869). Irish artist and illustrator. Born in Belfast, he studied in that city, London, and Paris. He was principally known as a contributor to *Punch*, in which journal some of his most humorous skits on contemporary life appeared. He also worked for many other magazines in various veins of sentiment, and illustrated books of many types.

Morse, SAMUEL FINLEY BREESE (1791-1872). American inventor. Born April 27, 1791, and graduat-



S. F. B. Morse,
American inventor

ed at Yale in 1810, he early showed artistic ability and came to study art in England with Allston and Benjamin West, exhibiting at the R.A. in 1813. Two years later he returned to New York and settled down as a portrait painter. In 1826 he was appointed first president of the national academy

of design. Interested in science, he experimented in the phenomena of electricity, and conceived the possibility of using it as a means of communication, with the result that in 1835 he produced a telegraph at New York university, half a mile in length. A public exhibition of his invention in 1837 led to his association with the New Jersey firm of Vail.

Unable to interest American or European governments in his invention, for some years he devoted his time and means to perfecting it. At last, in 1843, Congress voted money for a line from Washington to Baltimore, and the following year the first telegraph message, reading: "What hath God wrought?" was dispatched from the capital, May 24, 1844. Morse helped to introduce daguerreotyping into America, and conceived the idea of an Atlantic cable. He died at New York, April 2, 1872. See *Life*, S. I. Prime, 1875; S. F. B. Morse, his letters and journals, ed. E. S. Morse, 1914.

Morse Code. System of signals for the telegraphic transmission of alphabetic letters, numerals, punctuation marks, and conventional phrases. The original code, devised in 1837 in collaboration with Alfred Vail, was introduced by S. F. B. Morse for use with his self-recording telegraph. A revised code, issued in 1844, and now distinguished as the American Morse, is still in local use within the U.S.A. and Canada. It allocates to the letters most frequently used the shortest signals.

In 1851 an international conference compiled a code, partly from the American and partly from three other systems. This international or continental code is now used in all other lands, as well as in ocean-telegraphy, both cable and wireless. It is the Morse code as used in the United Kingdom. It avoids the five American spaced-dot signals, and distinguishes the letter signals by limiting the elements to a maximum of four, the numeral signals and punctuation signals being uniformly composed of five and six elements respectively. Although Morse is called the dot-and-dash system, the two symbols are not necessarily short and long in transmission. They may repre-



Morriston The Scottish river where it descends into Loch Ness at Invermorriston

sent uniform needle-deflections to left and right of a median line, and in the siphon recorder used on long distance cables are printed in a continuous zig-zag from side to side.

In British army signalling—with flags, lamps, and heliographs—the international alphabet is used, the dash being thrice the length of the dot. Some of the numeral-signals are shortened for the purpose of repetition. See Code; Signalling.

| | | | | | |
|---|-------|---|-------|-------|---------------------|
| A | --- | N | --- | ----- | + |
| B | ---- | O | ---- | ----- | = or % |
| C | ----- | P | ----- | ----- | = (Break sign) |
| D | ----- | Q | ----- | ----- | - (Hyphen) |
| E | ----- | R | ----- | ----- | |
| F | ----- | S | ----- | ----- | (Full stop). |
| G | ----- | T | ----- | ----- | (Comma). |
| H | ----- | U | ----- | ----- | (Colon). |
| I | ----- | V | ----- | Long | Short |
| J | ----- | W | ----- | ----- | 1. water, used in |
| K | ----- | X | ----- | ----- | 2. building opera- |
| L | ----- | Y | ----- | ----- | 3. tions. Ordinary |
| M | ----- | Z | ----- | ----- | 4. mortar for brick |
| | | | | ----- | 5. building con- |
| | | | | ----- | 6. sists of freshly |
| | | | | ----- | 7. burnt lime and |
| | | | | ----- | 8. clean sharp sand |
| | | | | ----- | 9. or grit, without |
| | | | | ----- | 0. earthy matter |

Morse Code. Alphabet, numerals, and punctuation symbols used in the United Kingdom

Morshansk. Town of Russia, in the govt. of Tambov. It stands on the river Tsna and the Moscow-Orenburg Rly., 50 m. N.E. of Tambov. The chief industries are brewing and the making of tallow, soap, hydromel, spirits of wine; considerable trade is done in grain, cattle, salt, and iron. It is the headquarters of the sect called Skoptzy (eunuchs). Pop. 32,000.

Mortagne. Town of France. In the dept. of Orne, it crowns a steep hill, 25 m. E. of Alençon. The lofty tower of the fine Gothic church, which was built in the 15th-16th centuries, collapsed in 1890. Textiles and gloves are manufactured. Pop. 4,000.

Mortality (Lat. *mors*, death). Literally, the state of being mortal. It is sometimes used as a synonym for death rate, e.g. the mortality from tuberculosis is very heavy. Tables of mortality consist of figures showing the number and proportion of persons of a given age who will die each year. Bills of mortality are abstracts from parish registers showing the number of persons who died in the parish during certain periods. These were rendered unnecessary by the introduction of compulsory registration of births, marriages, and deaths. See Death Rate; Infant Mortality.

Mortal Sin. Term used in Roman Catholic moral theology for sins necessarily and immediately fatal to spiritual life unless sincerely confessed, repented of, and pardoned. Sins of a lesser degree are known as venial ones. Mortal

sin has been defined as a direct and wilful transgression against some known command of God, either by omission or commission. Seven sins are reckoned as mortal or deadly, i.e. pride, avarice, lust, envy, gluttony, anger, and sloth. In the Roman Catholic Church it is held that mortal sin can only be forgiven by absolution after confession, while venial sins are forgiven by simple contrition and by

a renewal of grace through Holy Communion or otherwise. See Sin.

Mortar. Mixture of lime and sand, etc., and water, used in building operations. Ordinary mortar for brick building consists of freshly burnt lime and clean sharp sand or grit, without earthy matter and mixed with clean water, in the proportions of one part of lime to three parts of sand or grit. It may be made stronger by reducing the quantity of sand or grit. For fine-jointed, ashlar masonry, mason's putty, formed of slaked lime and water, is often used.

Cement mortar consists of one part Portland cement to two parts sand or equal parts of cement and sand, and is used where extra strength or superior weather-resistance is required, as in arches, chimney-stacks, warehouse, quay, and dock construction, and works of civil engineering generally, especially when the structure is to harden under water. The obvious reason for prescribing clean sharp sand is that impurities prevent adhesion of the lime to the sand grains, while the sharpness affords a better grip than would smooth or rounded particles. Also, if the sand is not clean, the mortar is liable to premature decay. See Adobe; Building; Cement; Lime; Masonry.

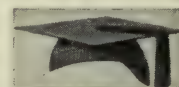
Mortar. Smooth-bored and muzzle-loading cannon, designed to throw shot or shell short distances at high angles of elevation. The older mortars were made of thick metal, had very short barrels, and were mounted on strong frames called mortar beds. The range was altered by varying the charge. The term mortar came into prominent use again in 1914 when the Germans used a 21 cm. piece (8·27 in.) throwing a 262 lb. shell 8,400 yards; the weight of

gun and carriage was only 97 cwt. They had also a 28 cm. (11·2 in.) piece which was called a mortar, though the correct designation of both weapons is howitzer (q.v.). See Trench Mortar.

Mortara. Town of Italy, in the prov. of Pavia. It stands on the Arbogna river, 32 m. S.W. of Milan, and is an important rly. junction, with iron works and factories for making hats, cheese, and machinery. Its old church contains some notable paintings. On March 21, 1849, the Austrians defeated the Sardinians here. Pop. 10,500.

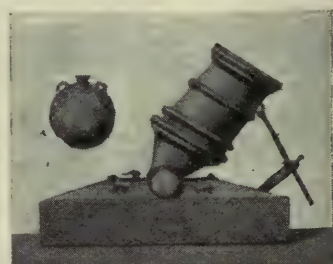
Mortara Case, THE. Diplomatic incident caused by the alleged abduction of a Jewish child in 1858. Edgar Mortara, son of a Bologna Jew, was baptized Jan. 24, 1858, when five or six years old, by his Christian nurse, who thought that an illness was likely to prove fatal. The archbishop of Bologna thereupon claimed the child as a Christian, took him away from the parents, June 23, and concealed his whereabouts. England, France, and Prussia made representation to Pope Pius IX in 1859, but he refused to interfere, and beyond the fact that the Pope himself had adopted the lad, nothing more was heard of Edgar Mortara until 1870, when the Italians entered Rome and found him in a seminary. He refused to revert to Judaism, and eventually became an Augustinian monk and an able preacher. See The True Story of the Jewish Boy, Edgar Mortara, 1860.

Mortarboard. Academic cap, also called cater (i.e. four-cornered cap or trencher).



Mortarboard as worn at universities

It consists of a skull cap surmounted by a stiff, square cloth-covered board and silk tassel, and derives its popular name from its resemblance to the square board with a handle used by bricklayers. It originated in the old ecclesiastical biretum, or barret cap, the ridged sutures of which were



Mortar employed in old warfare, with large shot, which was fitted with handles for carrying

emphasised until it was nearly square with a flat top; this surface was enlarged and the *biration* became the square cap of the English high churchmen of the 17th century. In the 18th century the square was stiffened with wood or cardboard and a tassel was substituted for the original ornamental knot. *See* Cap.

Morte d'Arthur, THE. Name of several works in verse and prose embodying the medieval legends of King Arthur and the Knights of the Round Table. Of these the most important is the compilation, mainly from French sources, completed by Sir Thomas Malory in 1470, and first printed by Caxton in 1485. Malory's work, of deep intrinsic interest, is remarkable for its selection and arrangement of the more notable features of the Arthurian story, the loves of Lancelot and Guinevere, and the Quest of the Holy Grail. It is the finest extant example of 15th century English prose, a foundation stone of English prose fiction, and proved a source of inspiration to Spenser, Matthew Arnold, Swinburne, William Morris, and Alfred Tennyson, whose *Idylls of the King* are to a considerable extent based upon it. *See* Arthur; Elaine; Malory; Tennyson.

Bibliography. *Le morte Arthur*, ed. by F. J. Furnivall, 1864, and J. D. Bruce, 1903; *Morte D'Arthur*, Malory's, ed. J. Gollancz, 1900; E. Strachey, 1898, repr. 1904; E. Rhys, 1909; and H. O. Sommer, with essay by A. Lang, 1889-91; *The Legend of the Holy Grail*, A. Nutt, 1888; *Survey of Arthurian Romance*, J. L. Weston, 1905; *Vulgate Version of the Arthurian Romances*, ed. from MSS. in British Museum, with index, H. O. Sommer, 1908-16; *Structure of Le Livre d'Artus*, H. O. Sommer, 1914.

Mortgage. In English law, the creation in property of an interest which is to cease when a certain sum of money, usually with interest, is paid on a certain date. When the owner of land, leasehold, freehold, or copyhold, wishes to borrow money on the security of his land, he usually does so by way of mortgage.

The nature of the transaction is thus: the borrower (mortgagor) executes a deed conveying the land to the lender (mortgagee), and agrees to pay back the money with interest at an agreed rate in six months. At Common Law, if he did not repay on the given date, he had no right to repay subsequently; that is, the mortgagee became the absolute owner of the property. But the court of equity interfered, and would, even after the six months had elapsed, allow

the borrower to repay the principal, interest, and costs, and compel the mortgagee to reconvey the property. As a rule, the mortgagee does not enter into possession of that property, but if he does he is compelled to account to the mortgagor for all the rents and profits he receives, and is in no circumstances allowed to make profit beyond his principal, interest, and costs, and anything he has necessarily spent in repairs, etc.

A mortgagee who wants his money must give three months' notice. After such notice is given on one side or the other, if the money is not repaid, the mortgagee can either (1) sell the property and repay himself, handing over the balance to the mortgagor; or (2) foreclose. To foreclose means to obtain an order from the court that, unless the mortgagor pays up within a fixed time, he shall lose all rights to redeem, so that the land, etc., becomes the absolute property of the mortgagee. If the mortgagee sells, and the property does not realize enough to pay the principal, interest, and costs of sale, he can sue the mortgagor for the balance. During and after the Great War Acts of Parliament restricted the power to call in mortgages and to raise the rate of interest thereon above a certain figure. *See* Land Laws; Rent Restriction.

Mort Homme. Hill of France, in the dept. of Meuse. It is 968 ft. high, and stands on the W. bank of the Meuse, a little to the N. of Verdun. In March, 1916, the Germans tried to storm it by frontal attacks and to take it in flank, but were defeated with enormous losses. Another attack on April 9 also failed, but in May a renewal of it brought about a French withdrawal. The hill was retaken by the French on Aug. 20. *See* Verdun, Battles of.

Mortification. Death of a limited portion of tissue. The term gangrene (*q.v.*) is more often used.

Mortification (Lat. *mortuus*, dead; *facere*, to make). In Scots law, a gift of land made inalienably for ecclesiastical or charitable purposes. The word is also applied to lands so given, and to funds or institutions supported from the revenues therefrom. It is equivalent to the English mortmain (*q.v.*).

Mortillet, LOUIS LAURENT GABRIEL DE (1821-98). French anthropologist and zoologist. Born at Meylan, Isère, Aug. 29, 1821, he studied in Paris. The propaganda of a newspaper which he acquired led, after the 1848 revolution, to a sentence of imprisonment. To elude this he resided abroad, mostly in Italy and Switzerland. Work at

the Geneva natural history museum induced him to study the Swiss lake-dwellings. Returning to Paris, 1864, he became in 1868 curator of the St. Germain museum. He died at St. Germain-en-Laye, Sept. 25, 1898, having written a number of books on antiquarian subjects.

Mortimer. Famous English family. Of Norman origin, the name is taken from Mortemer, their home in Normandy. Ralph de Mortimer followed William the Conqueror to England and obtained a good deal of land in the border counties, where the name is still perpetuated by Mortimer's Cross and Clebury Mortimer. In 1086, according to Domesday, he had land in eleven counties, and his successors, whose chief stronghold was first Wigmore Castle and later Ludlow Castle, were equally powerful. One of them, Roger Mortimer, helped to win the battle of Evesham for Henry III, and another Roger obtained by marriage great estates in Ireland. The latter was the baron who, the lover of Isabella, helped to overthrow her husband, Edward II. In 1328 he was made earl of March and, after his death as a traitor, his title and estates were restored to his grandson, Edmund. He married Philippa, daughter of Lionel, duke of Clarence, and the Mortimers were thus members of the group in whom the succession to the crown lay. The house became extinct when the 5th earl died in 1425. *See* March, Earl of; Wigmore.

Mortimer's Cross, BATTLE OF. Fought during the War of the Roses, Feb. 2, 1461. Mortimer's Cross is near Wigmore in Herefordshire. Edward of York, afterwards King Edward IV, was then at Shrewsbury, and the news of his father's death and the Yorkist disaster at Wakefield encouraged the Lancastrian lords to collect against him. The details of the engagement are lost, but it ended in a Yorkist victory. Owen Tudor was one of the captives executed by Edward after the battle.

Mortlake. Parish and village of Surrey, England. It stands on the Thames, 1½ m. E. by N. of Richmond, with a station on the L. & S.W. Rly. The chief building is St. Mary's Church. A noted boating resort and the finishing point of the Oxford and Cambridge boat-race, Mortlake was at one time celebrated for its tapestries, a factory, said to be the first in England, having been set up here in 1616. It is now chiefly concerned with brewing and malting. Mortlake House was long a residence of the archbishops of Canterbury. Pop. 16,300.

Mortlake Ware. Enamelled delft and stoneware. It was manufactured at Mortlake between 1764 and 1820. Under Wagstaffe, and then Wisker, fine landscape and figure painting was applied to punch-bowls, panels, etc. *See* Pottery.

Mortmain (Fr. *mort*, dead; *main*, hand). Term used for land that cannot be alienated owing to the fact that it is in a dead hand. In England in early times a great deal of land was given by the kings to religious corporations. This process was disliked by the great nobles, and was inequitable, mainly because, as the corporations never died, the land in question never paid the dues, which were the medieval equivalent of the modern death duties. Consequently, in 1279, a law called the statute of mortmain prohibited "any person whatsoever, religious or other, to buy or sell, or under colour of any gift, term, or other title, to receive from anyone any lands or tenements in such a way that such lands and tenements should come into mortmain."

This law was designed to check the growing wealth of the church, for a practice had grown up of conveying lands to the church, the conveyance being accompanied by a private bargain allowing control to remain with the grantor and his heirs, who thus avoided feudal dues. Later statutes of mortmain were designed to close the loopholes of evasion in the original enactment.

Under the Mortmain and Charitable Uses Act, 1888, which repealed all the old statutes and partly re-enacted them, no land or interest in land may be acquired by a corporation except under specific licence from the crown or by virtue of some statute. *See* Land Laws.

Morton, EARL OF. Scottish title borne since 1458 by a branch of the family of Douglas. One of the family, James (d. 1430), was called lord of Dalkeith, and his descendant, another James, was made Lord Aberdour and earl of Morton in 1458, the year when he married Joan, daughter of King James I. The 3rd earl had no sons, but his daughter married a Douglas who became the 4th earl and figures in history as the regent Morton. Upon his execution the earldom was given to a Maxwell, but before long the earldom was restored to a Douglas. William, earl of Morton in the time of Charles I, was lord treasurer of Scotland. To obtain funds for the king's cause, he sold Dalkeith to the Scott family, obtaining a grant of the islands of Orkney and Shetland. This was contested, but the islands were

kept by the earls until about 1750, when they were sold to Baron Dundas, ancestor of the marquess of Zetland. James (d. 1768) became president of the Royal Society. The earl still retains Aberdour, in Fifeshire, for centuries the property of the family, and his eldest son is known as Lord Aberdour. The numbering of the earls is uncertain. *See* Douglas.

Morton, JAMES DOUGLAS, 4TH EARL OF (c. 1526-81). Scottish statesman. A son of Sir George



Earl of Morton,
Scottish statesman

Douglas, he owed his earldom to his wife, Elizabeth, daughter of the 3rd earl. In 1553 he succeeded to the title and estates, and was soon a prominent figure in that stormy time. He was made lord chancellor, and was one of those who arranged the murder of Rizzio; later, too, he was among the queen's enemies, and was largely responsible for her defeat at Langside. In 1572 he was made regent of Scotland, and crushed the last efforts of Mary's friends. After a short period of enforced retirement, he recovered his influence over the young king, and retained power until 1580, when he was arrested on a charge of having shared in the murder of Darnley. Found guilty he was put to death by the maiden (*q.v.*), his own invention, June 2, 1581.

Morton, JOHN (c. 1420-1500). English prelate. Born in Dorset, he was educated at Cerne Abbey, in that county, and at Balliol College, Oxford. He became an ecclesiastical lawyer, and was active on the Lancastrian side in the Wars of the Roses. After the battle of Tewkesbury, Morton submitted to Edward IV, and thenceforward his rise was rapid. In 1473 he was made master of the rolls, and in 1479 bishop of Ely. On Edward's death he was imprisoned by Richard III, but he escaped from Brecon and joined the exiled Richmond, the future Henry VII, in Flanders. After Henry obtained the crown, he made Morton archbishop of Canterbury and lord chancellor. Created a cardinal in 1493, he remained the king's chief counsellor until his death at Knole, in Kent, Sept. 15, 1500. His name is perpetuated by Morton's Dyke, which he built from Wisbech to Peterborough, and by Morton's Fork, a fiscal device for extracting money from both rich and poor. *See* Life, R. I. Woodhouse, 1895.

Morton, JOHN CHALMERS (1821-88). British agriculturist. Born July 1, 1821, the son of John Morton, agriculturist, he was educated at Edinburgh. In 1838 he assisted his father on the Whitfield example farm, Glos., and from 1844 until his death was editor of *The Agricultural Gazette*. For a time, in 1854, he conducted the classes in agriculture in Edinburgh University, and was an inspector under the land commissioners. He died at Harrow, May 3, 1888. Morton's works include *A Cyclopaedia of Agriculture* ed. 1855, and *Handbook of Farm Labour*, 1861. He edited Arthur Young's *Farmer's Calendar*, 1861-62, reissued as *The Farmer's Calendar*, 1870.

Morton, WILLIAM THOMAS GREEN (1819-68). American dentist. Born at Charlton, Massachusetts, he qualified as a dentist at the Baltimore College of Dental Surgery, and also studied medicine at Harvard. He invented a new way of attaching artificial teeth to plates, but his chief claim to fame lay in his use of sulphuric ether as a local anaesthetic for the extraction of teeth and other dental operations. Morton received the Montyon prize in 1852 for his discovery, which was first used in 1846, and was offered £20,000 by the American government for the patent. Morton refused the offer and spent the greater part of the remainder of his life in litigation.

Mortuary (late Lat. *mortuarius*, from *mortuus*, dead). In the modern meaning of the word, a place for the reception of dead bodies, pending burial. In Great Britain and Ireland, under various Public Health Acts of 1875, 1878, and 1897, local authorities can be required by the local government board to provide mortuaries where dead bodies can be received for purposes of identification, inquest, or post-mortem examination. In the metropolis mortuaries are provided by the metropolitan borough councils and the city corporation.

In ecclesiastical law a mortuary was a fee customarily paid out of the estate of a deceased person to the parson of the parish in which he had resided. A statute of Henry VIII, 1530, still unrepealed, fixed the amount of mortuaries, the maximum sum payable being 10s. on estates exceeding £40 in value.

Morvan, LE. Mountain dist. of France, lying in the depts. of Nièvre, Côte-d'Or, Yonne and Saône-et-Loire. The chain of hills, with Bois-du-Roi (2,960 ft.) and Mt. Beuvray (2,690 ft.) as its chief points, is mostly of gneiss and granite formations, and is covered with beech and chestnut forests.



Mosaic from ancient Rome, now in the British Museum, representing sacrificial rites at an altar, probably by a tomb

Morveau, Louis Bernard Guyton de (1737-1816). French chemist. Born Jan. 14, 1737, at Dijon, he studied law, and was avocat-général to the parlement of Dijon, 1755-82. His main interest, however, was science, and he taught chemistry at Dijon for 15 years. In 1772 he published his *Digressions Académiques*. The following year he introduced fumigation as a safeguard against contagion. Giving up the law in 1782, he began, with Lavoisier and others, the great work on chemical nomenclature, the first volume of the *Dictionnaire de Chimie* being published in 1786. Elected to the Legislative Assembly, 1791, and to the Convention, 1792, he voted for the death of Louis XVI, and became a member of the committee of public safety. He died Jan. 2, 1816.

Morvi. Native State and town of India in the Gujarat district of Bombay Presidency. Its area is 822 sq. m. The town is 35 m. from Rajkot, on the bank of the Machhu, where the river is bridged. Pop. dist., 90,000; town, 15,000.

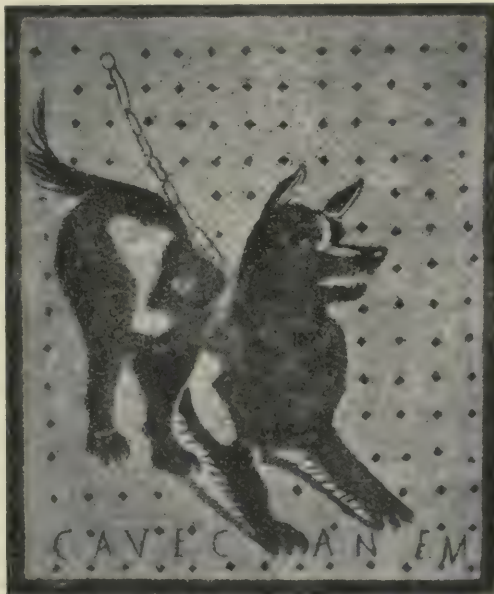
Mosaic (Low Lat. *musaeicus*, belonging to the Muses, artistic). Term applied (1) to the tessellated work in ancient Roman pavements, and (2) to classical and medieval decorations executed with inlaid cubes of various stones, metals, and glass. Mosaic was derived from Hellenistic art. Its principal use in Roman times was to imitate coloured woollen carpets spread on pavements. The early Christians, searching for a technique capable of producing images resplendent in light and colour, found it in mosaics of melted coloured glass and squares of gold. In the Constantinian period inlaid marbles of

various sizes (*opus sectile*) and fragments of marble and hard stone (*opus alexandrinum*), put together so as to form a geometrical design, were largely employed for mural decoration.

As the technique was enriched by the addition of glass and enamel, the art was no longer confined to geometrical patterns, but took the place of pictorial fresco decoration. These pictures in mosaic were entirely restricted to the interiors of Constantinian basilicas; it was not until the 12th or 13th century that they began to appear on the façades.

Fine interior mosaics of the 4th and 5th centuries are preserved in S. Maria Maggiore and the baptistery of S. John Lateran at Rome and in the churches at Ravenna. In the baptistery of the Orthodox at Ravenna the mosaics of the cupola and drum are esteemed the most complete and best preserved of all baptistery mosaics. Those of S. Mark's, Venice, are notable. The remains of fine medieval mosaics are to be seen on the shrine of the Confessor, Westminster Abbey.

In all Byzantine architecture (*q.v.*) mosaic is the recognized decoration for walls, ceilings, or pavements. The pieces were laid on a ground of fresh stucco of lime and marble dust, of such consistency and firmness that when dry they could be polished smooth on the top. Mosaic was impervious to water, wind, and sunshine, and thus appealed by its lasting quality. The modern practice of it is somewhat restricted, though there are fine examples in the dome of S. Paul's Cathedral, and in the chapels of Westminster Cathedral. * See Art; Byzantine Art. Issus; Justinian; S. Mark's.



Mosaic from Pompeii depicting a dog, beneath which is the warning *Cave canem*, beware of the dog

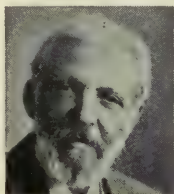
National Museum, Naples

Mosasaurus (Lat. *Mosa*, the Meuse; Gr. *sauros*, lizard). Extinct marine reptile, so called because the first skeleton was discovered at St. Pietersberg on the Meuse. Somewhat similar to a snake in appearance, with strong paddles, it attained a length of 40 ft. Numerous specimens have been found in the Cretaceous deposits of Europe and N. America.

Mosaylima OR **MOSEILIMA** (d. 643). Arabian prophet. Of the Beni-Henifah tribe, from Yamama, he was contemporary with Mahomet and was already known for his piety when the prophet began his teaching. His claims to divine inspiration and vocation as a leader of the people were repudiated by Mahomet, and when, on the death of the latter, Mosaylima set up a rival sect, he was killed in battle by Khalid, one of Abu Bekr's generals, and, save for the few adherents who escaped the general massacre, his sect was extinguished.

Moschatel (*Adoxa moschatellina*). Perennial succulent herb of the natural order Caprifoliaceae. It is a native of Europe, N. Asia, and N. America. It has a tuberous, creeping rootstock, from which in early spring arise the obscurely four-angled stems, each with only two leaves, which are divided into three-lobed leaflets. The stem ends in a crowded head of five small green flowers, which have a musky odour, whence the plant derives its name. These are succeeded by juicy, green berries.

Moscheles, Felix Stone (1833-1917). British painter. Born in London, Feb. 8, 1833, the son of Ignaz Moscheles, he was educated at King's College and later in Germany. His father became director of the conservatoire at Leipzig, where Felix attended schools. After



F. S. Moscheles,
British painter
Elliott & Fry

further study in Paris and Antwerp, he settled in London, where he enjoyed a wide reputation as a portrait painter. Among his subject-pictures were *Grief*, 1878; *Spanish Song*, 1879; *Little Mozart's own Choir*, 1882; and *The Isle's Enchantress*. Moscheles was well-known as an advocate of international arbitration. He died at Tunbridge Wells, Dec. 20, 1917. He wrote two autobiographical works, *In Bohemia with Du Maurier*, and *Fragments of an Autobiography*, and edited Mendelssohn's letters to his parents.

Moscheles, Ignaz (1794-1870). Bohemian composer and pianist. Born at Prague of Jewish parents.

May 30, 1794, he studied at the Conservatoire there and in Vienna. From 1826-46 he lived in London, where he became famous as a teacher, and in 1846 he settled in Leipzig as professor at the new conservatoire. He died in Leipzig, March 10, 1870. Moscheles played as well as taught the piano, and was a great favourite in London, where he last appeared in 1865.



Ignaz Moscheles,
Bohemian composer



Moschatel. Foliage and flower head of the succulent herb

He wrote much music, and his piano studies are still highly esteemed. His life has been translated into English by A. D. Coleridge, 1873. *From. Mō-shel-ea.*

Moschus (2nd century B.C.). Greek poet. Born at Syracuse, he became a pupil of the grammarian Aristarchus of Samothrace at Alexandria. Neither he nor Bion (q.v.) is really a bucolic poet, although they are generally so described. Of two extant poems one is a mythological epic on the Carrying off of Europa by Zeus in the form of a bull. The Lament for Bion, formerly attributed to Moschus, is now considered to belong to a much later date.

Moscovitch, Maurice. Actor. First known as a Yiddish actor of

great power, he made a sensation by his performance in English of *Shylock in The Merchant of Venice* at the Court Theatre, London, 1919. His gift for strong emotional acting was also successfully shown in *The Great Lover*, 1920, and the one-act play, *Don Carlos*, 1921.

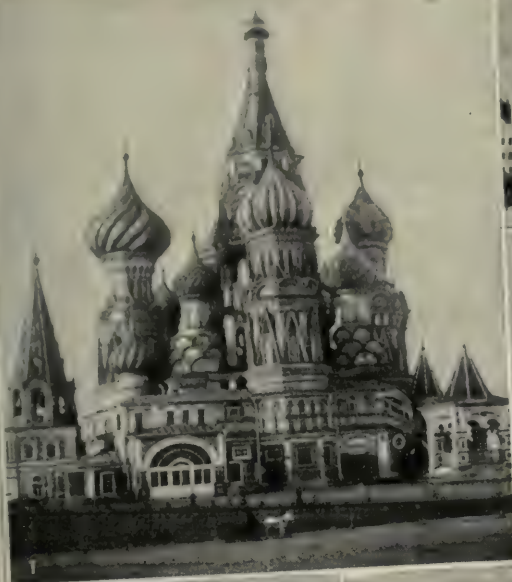
Moscow. Government of central Russia. It is bounded on the N. by the government of Tver, W. by Smolensk, S. by Kaluga and Tula, and E. by Ryazan and Vladimir. Its area is 13,000 sq. m. The district is best known as the greatest industrial centre of Russia, especially for textile goods; there are also manufactories of carpets, chemicals, soap, and paper. Forests cover a considerable area; elsewhere the soil is infertile.

Moscow (Russ. Moskva). Ancient capital of Russia and crowning place of the tsars, now the capital of Soviet Russia. It lies, like Rome, on seven hills, 500-850 ft. in alt., on the river Moskva, 400 m. S.E. of Petrograd. It consists of five parts, divided into 17 dists., and covers 40 sq. m., including the suburbs. It is the seat of the metropolitan of Moscow, and the governor-general of the prov. of Moscow. The city is irregularly built, semi-circular in form, and with its numerous domes and cupolas has a picturesque appearance.

The old quarter consists of the Kremlin on the N. bank of the river and the busy Kitai Gorod or China Town. Biely Gorod or White City, encircled by boulevards, is the fashionable and shopping centre. Beyond lies the Zemlyanoi Gorod or Earth City, so called from the 17th century earth wall in which it is enclosed. The rest of the city forms a fringe of



Moscow. Plan of the central districts of the capital of Soviet Russia



1. Cathedral of S. Basil, founded by Ivan the Terrible, 1554. 2. Grand Imperial Theatre and Opera House, rebuilt in 1854. 3. House of the Boyar Romanov, where the first Romanov tsar was born, 1613. 4. The tower of Ivan Veliki, 320 ft. in height.

Red Gate, commemorating the coronation of Elizabeth Petrovna, 1742. 5. Duma or City Hall, built in 1892. 6. The Kremlin from the south-west. The outstanding feature is the Great Palace, behind which rises the bell

MOSCOW : NOTABLE BUILDINGS IN THE ANCIENT CAPITAL OF RUSSIA

populous suburbs, intersected by boulevards.

The Krémelin, or citadel, in the centre of the city, is the dominating feature. This ancient residence of the tsars, with its five gates and 18 towers, built originally of wood, was one of the few places which escaped the great fire of 1812. The walls were erected by Ivan III. In the cathedral of the Assumption, or Uspenski cathedral, originally the burial place of the patriarchs, the tsars were crowned and proclaimed by the ringing of the great bell, Ivan Veliky, or Big John. The huge belfry, with a carillon of 32 bells, was begun by Feodor Ivanovitch and completed by Boris Gudunov in 1600. The famous Tsar Kokol or king of bells, the largest in the world, cast in 1735 and cracked in the foundry, stands on a pedestal opposite Ivan Veliky. It is 19 ft. high, 66 ft. in circumference, and weighs 200 tons.

Moscow, sometimes called the Holy City and Little Mother, is a city of churches, of which there are over 400. Many are richly coloured and have gilded domes. The cathedral of the Archangel Michael, completed 1508, contains the tombs of Peter II and Ivan the Terrible. The cathedral of the Annunciation has nine domes, each surmounted by a golden cross. The cathedral of S. Basil, facing the historic Red Square, was begun by Ivan the Terrible in 1554 to commemorate the conquest of Kazan. It has 12 multicoloured domes. The church of the Saviour was consecrated in 1881 to commemorate the destruction of Napoleon's army in 1812.

The secular buildings include the university, founded 1775, containing a library of 400,000 vols., the Rumiantzev Museum, and the Tretyakov picture gallery. There are also theological, technical, and agricultural institutes, and schools of painting and engineering. Mention may be made of the Gostiny Dvor, a bazaar with over 1,200 shops, Petrovsky Palace, and the Sukharev Tower, a Gothic structure erected by Peter the Great in 1689.

Commercially Moscow ranked next to Petrograd. It had a large trade in textiles, foodstuffs, paper, tobacco, chemicals, leather, and machinery. Owing to its position, connecting it by rly. with Petrograd, Jaroslav, and Nijni-Novgorod, and by river with the Baltic and the Caspian, it was the centre of the internal trade of Russia. It had a large overland trade with the E. Since the revolution the industries have declined.

Moscow is mentioned in the early chronicles in 1147, when it was a

small village. The city was built by Prince Yuri Dolgoruki on the site of the Kremlin. It did not attain any real importance, however, until 1325, when the metropolitan Peter transferred his seat from Vladimir-on-the-Klyasma, and made Moscow the religious capital. It became the capital of the empire in the reign of Ivan III, 1462-1505. Moscow was repeatedly ravaged by the Mongols and the Tartars. During the invasion of Russia by Napoleon, Sept. 2, 1812, it was practically burned to the ground, three-fourths of the houses being destroyed, and the fire lasting four days. The work of rebuilding the city began in 1813.

In 1918 the Soviet government transferred the seat of government from Petrograd to Moscow. Pop. c. 1,000,000. See Kremlin; consult also *The Story of Moscow*, Wirt Gerrare, 1912; *Moscow*, H. M. Grove, 1912. **R. M. Birkmyre**

Moseley. Suburb of Birmingham, England. It comprises the ecclesiastical districts of St. Anne and St. Mary in the S. of the city. The station on the M. Rly. is $3\frac{1}{2}$ m. S. of New Street station. See Birmingham.

Moselle. Delicate, aromatic wine, generally of the white variety. It has a low percentage of alcohol, and is made from grapes grown in the lower valley of the Moselle. Unlike most wines, Moselle does not improve by keeping. It is either still or sparkling. The latter is distinguished by a pronounced grape flavour, and is one of the lightest of effervescing wines. Among the chief brands are Zeller, Zeltinger, Berncastler, Schwarz-

the best wine being that from slopes most exposed to the sun.

Moselle or **MOSEL**. River of France and Germany. It rises in the S. Vosges, near Bussang, and flows in a N.W. direction into Lorraine. At Toul it turns N., skirts Luxemburg, and passes into Germany, following a winding course to the N.E. until it reaches the Rhine at Coblenz. Its chief tributaries are the Vologne, Meurthe, Seille, Orne, Sarre, and Kyll, and the chief towns on its banks are Remiremont, Épinal, Toul, Pont-à-Mousson, Metz, Thionville, Trèves, Berncastel, Cochem, and Coblenz. Its length is 320 m. It was prominent in the Great War in the battles of Morhange (q.v.) and Nancy (q.v.). See Epinal.

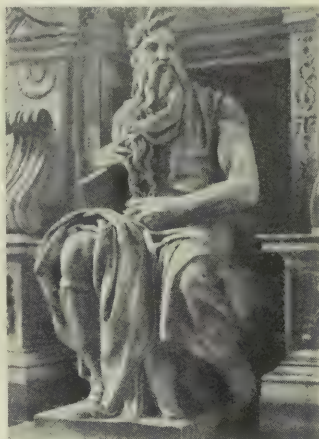
Mosely, ALFRED (1855-1917). British merchant. Born Oct. 13, 1855, he was educated at Bristol



Alfred Mosely,
British merchant
Elliot & Fry

Grammar School. Early in life he went to S. Africa, and acquired wealth in the diamond fields, which enabled him to retire. During the S. African War he equipped a hospital at Cape Town, and in 1900 was created C.M.G. Having returned to England, he assisted Joseph Chamberlain in his Tariff reform propaganda. In 1902 he organized and sent to the United States, at his own expense, an industrial commission, and in 1903 an educational commission. In 1907 Mosely sent 700 school teachers from England to America to study methods of education in the U.S.A. and Canada. He died at Hadley Wood, July 23, 1917.

Moses. Hebrew law-giver and leader of the Israelites from Egypt. Son of Amram, a Levite, and Jochebed, and younger brother of Miriam and Aaron, he was adopted by Pharaoh's daughter, and brought up as an Egyptian prince. According to the Biblical narrative (Exodus-Deut.), after slaying an Egyptian taskmaster who had ill-treated an Israelite, he fled to Midian, and married Zipporah, daughter of Jethro, a shepherd. At Mt. Horeb he received a Divine command to return to Egypt, from which he later led the Israelites to the confines of Canaan, receiving the Decalogue from Jahveh, at Mt. Sinai. After glimpsing the Promised Land from Pisgah, he died at the age of 120 years, leaving two sons, Gershom and Eliezer. He was buried in an unknown grave.



Moses. Sculpture representing the law-giver of Israel, by Michelangelo
Church of S. Pietro in Vincoli, Rome

berger, Brauneberger, Piesporter, and Muscatel. Like hock, Moselle is grown on terraced vineyards,

By a late Jewish tradition, Moses was thought to be the author of the Pentateuch, a work now usually regarded as the product of several compilers from older documents, only parts of it being definitely ascribed to Moses. Moses figures largely in the Koran, in Islamic legend, and in the pages of Josephus. See Aaron; Decalogue; Exodus; Pentateuch.

Bibliography. The Story of Moses and Joshua, J. Telford, 1893; Authority and Archaeology, S. R. Driver, 1899; Encyclopedia Biblica, T. K. Cheyne, 1899-1903; The Story of Moses, H. L. Taylor, 1913.

Mosheim, JOHANN LORENZ VON (1694-1755). German historian. He was born at Lübeck, Oct. 9,



J. L. von Mosheim,
German historian

1694, and became professor of theology at Helmstedt, Brunswick, in 1723. In 1747 he was appointed professor of divinity and chancellor of Göttingen University. He died Sept. 9, 1755. His *Institutiones Historiae Ecclesiasticae*, 1726, the work which established his fame, was translated into English by A. Maclaine, 1764, and again in 1832, by J. Murdock (new edition, 1892).

Moshi or **MOSCHI**. Settlement on the S. slopes of Mount Kilimanjaro, in Tanganyika territory, E. Africa. It forms the N. terminus of the Usambara rly. from Tanga, and is connected by rly. with Voi (q.v.), on the Uganda Rly. It was occupied by the British, March 12, 1916. See East Africa, Conquest of.

Moskva. River of central Russia, a tributary of the Oka. It rises in the govt. of Smolensk, flows E. through the govt. of Moscow, and then S.E., joining the Oka below Kolomna, after a course of 300 m. The battle between the French and the Russians, called by the latter the battle of Borodino (q.v.) was fought along it, Sept. 7, 1812.

Moslem League, ALL INDIA. Mahomedan society founded in May, 1908. Its chief objects are the "promotion of concord and harmony among the different communities of India; the advancement of the general interest of the country in concert with the other Indian communities, and the advancement and safeguarding, by all constitutional and loyal methods, of the special interests of the Mahomedan subjects of the king emperor." The central committee is located at Lucknow, and there

are provincial and local leagues throughout India, and a branch in London. See India; Mahomedanism.

Mosman. Suburb of Sydney, New South Wales. It has zoological gardens, and lies opposite Sydney on Port Jackson. Pop. 13,200. See Sydney.

Mosque (Arabic, *mesjid*). Mahomedan place of worship. Noteworthy examples are at Cairo, Mecca, Medina, Jerusalem, Damascus, and in various parts of India. In England there is a mosque at Woking, Surrey. Varying in form in different countries, mosques generally have a central dome, minarets, and a court provided with a tank for ceremonial ablutions. Within is a pulpit, a lectern, a niche indicating the direction of Mecca, and carpets, but no seats. The interior decoration is restricted to arabesques and texts from the Koran. See Arabia; Cairo; Damascus; Delhi; Mahomedan Art and Architecture.

Mosquito (Span., little fly). Fly of the family Culicidae. Found in all hot and temperate climates, mosquitoes are one of the worst

pests of the tropics. Great Britain possesses about 20 species, usually called Gnats, some of which attack man as vigorously as their tropical relatives. But their less abundance and the shorter duration of favourable weather prevent them from becoming a serious plague. All the family are provided with horny boring apparatus, but it is only the female that sucks blood. She may be recognized by the absence of the fine feather-like antennae that adorn the male.

One genus, *Anopheles*, is the vehicle of malaria, a disease not merely often fatal in itself, but predisposing to other diseases. The malarial parasite is conveyed to the female gnat when she sucks the blood of an infected person. In the stomach the parasite undergoes various stages of development, then enters the muscles and the body cavity, and so finds its way to the salivary glands of the insect about ten days after the infection has been received. It is then in a position to be conveyed into the blood of a person attacked.

Other species of mosquito are the vehicles of yellow fever and filariasis; and in these cases also the two hosts, man and mosquito, are necessary for the various stages in the life history of the parasites. Hence the battle with these diseases involves the destruction of the mosquito, best effected by destroying its breeding places. The larval stage of the mosquito is passed in the water, and by spraying the water with crude petroleum, the insects are killed. See Gnat Insects; Malaria; Yellow Fever.

Mosquito (Native form, Missquito). Tribe of Central American Indians. They inhabit the E. coast of Nicaragua, thence known as the Mosquito Coast. They are exceptionally intelligent, and speak a Sumo dialect. Their dark colour is attributed to intermarriage with shipwrecked negro slaves.

Mosquito Coast or **LA MOSQUITTA**. Maritime region of Central America. It embraces the S.E. corner of Honduras, and the E. coast of Nicaragua. It fronts the Caribbean Sea, is low lying, and contains several lagoons, the largest being Carataska in Honduras and Pearl Cay in Nicaragua.

The Mosquito Territory or Reserve, wholly in the latter republic, now forms the dept. of Bluefields. It is inhabited chiefly by Mosquito and Zambo Indians, with negroes from Jamaica. The region was a matter of diplomatic controversy, between the U.S.A. and Gt. Britain, but under the treaty of April 19, 1905, the U.S.A. acknowledged the claims of Nicaragua, and withdrew



Mosquito. Stages in development. 1. Egg-rafts and half grown mosquito larvae diving. 2. Full grown larva breathing at surface of water. Moulded larval skins on left, active pupae on right. 3. Mosquito emerging from pupa skin on surface of water. 4. Mosquito fully emerged and ready for flight.



Moss. 1. Germinating spore. 2. Moss-protonema. 3. Protonema which gives rise to a bud developing into leafy moss-shoot. 4. Longitudinal section of tip of male shoot. 5. Tips of female shoot with archegonia, two of which are enlarged to show the calypers or caps which are thrown off when the spores are ripe. 6. Leafy female shoot with fully developed capsule. All highly magnified

From Kerner's *Natural History of Plants* (Blackie)

Moss (*Muscineae*). One of the two classes of Bryophyta, the other class being the Hepaticae. The Bryophyta come in systematic botany between the Thallophytes and the Pteridophytes. Like the Thallophytes (algae, fungi, diatoms, etc.), their structure is entirely cellular, there being neither vessels nor woody tissue, though they have conducting cells which to some extent serve the purpose of vessels. They have stems, which are clothed with apparent leaves, though these are not homologous with the foliar organs of the flowering plants.

Mosses are reproduced by spores which are contained in an urn-like capsule produced by a sexual process. We have thus an alternation of generations as in the ferns, but with the difference that the asexual generation (spore capsule) grows on the sexual. The sexual elements are contained in what are popularly styled the "flowers" of the moss—technically the perichaete. This is formed at the apex of the stem, and consists of more crowded whorls of "leaves" enclosing either the male or the female elements, or both in the same flower. The male flowers contain antherids, the females archegones.

The antherids break up into a number of cells, each containing a coiled-up antherozoid which makes its way through a mucilage accompanying its liberation to the archegone, and fertilises the contained oosphere. The latter ultimately develops into a capsule filled with dust-like spores and covered with a cap (calyptr), thrown off when the spores are ripe. The spore-capsule is then seen to have a distinct lid, and when this falls off the spores are protected in certain orders by

a peristome—a series of long hygroscopic teeth. These open out in a dry atmosphere to liberate the spores, and close down in damp to keep them dry. There are variations of this mechanism in different orders of mosses. The spore on germination produces a hair-like thread which branches, and develops buds which grow into leafy stems—the moss-plant. Mosses are ubiquitous, growing almost anywhere, even on the bare rock and the brick-wall, preparing the

way for higher vegetation by forming a humus of their dead bodies and the minute particles of organic matter which every tuft of moss collects from the air. See Bog Moss; Botany; Hair Moss; consult also A Synopsis of the British Mosses, C. F. Hobkirk, 1873; The Student's Handbook of British Mosses, H. N. Dixon, 1904.

Moss. Seaport of Norway, in the co. of Akershus. It stands on a small bay of the Christiania Fiord, 33 m. due S. of Christiania. There are extensive iron mines in the vicinity, and a large quantity of timber is exported. The act of union between Norway and Sweden was signed here Aug. 14, 1814. Pop. 8,600.

Mossamedes. Port on the S. coast of Angola, Portuguese West Africa. It is situated on Little Fish Bay. Its industries are connected with fishing, whaling, and oil refining. A rly. has been constructed from Mossamedes as far as the Chela Mountains (105 m.), and is to be continued to Lubango, in the Huilla district. Pop. about 3,000.

Mosse, RUDOLF (b. 1843). German journalist. Born at Grätz, May 9, 1843, he was educated at Lissa. Moving to Berlin, he became a journalist, started a large publishing and advertising business, and founded the newspapers, Berliner Tageblatt, Berliner Volkszeitung, and Berliner Morgenzeitung.

Mossel Bay. Seaport of Cape Province. It lies 318 m. by rly. E. of Cape Town, and is situated almost midway between that city and Port Elizabeth. The bay on which it is built was frequently used by the Portuguese navigators in the early 16th century. White pop. 2,500.

Mossgiel. Farm in Ayrshire, Scotland. It is 1 m. N. of Mauchline, and was occupied by Robert Burns from 1784 to 1788. See Burns.

Mossley. Mun. borough of Lancashire. It stands on the Tame, 10 m. N.E. of Manchester, with a station on the L. & N.W. Rly. It is also served by the Huddersfield canal. The industries include cotton and woollen mills, also engineering works. Mossley became a borough in 1885. Near the town are some British remains known as Bucton Castle. Market day, Fri. Pop. 13,200. Mossley Hill is a suburb of Liverpool, with a station on the L. & N.W. Rly.

Mossop, HENRY (c. 1729–c. 1774). Irish actor. Son of Rev. John Mossop, he was educated at Trinity College, Dublin, but his tastes led him to the stage. In 1749 he made his first appearance in Dublin, and in 1751 in London as Richard III under the patronage of Garrick. After a few successful years he quarrelled with Garrick, and in 1759 returned to Dublin where he opened a theatre of his own. There, as in London, he had many successes, but financially his theatre was a failure, and he became a bankrupt in 1771. He passed some time in prison for debt before his death which took place in Nov., 1773, or Dec., 1774.

Moss Side. Suburb of Manchester, England. It comprises the eccles. dist. of S. James and Christ Church on the S. side of the city. See Manchester.

Mossvale. Town of New South Wales. It is 86 m. by rly. on the main line from Sydney to Melbourne. It is a tourist resort, and near it is the summer residence of the governor-general. Pop. 1,500.

Mostaganem. Small port of Algeria. It stands between Oran and Algiers, and is directly connected with the former, via Arzu, by rly. It is identified with the Portus Magnus of the Romans. The harbour is exposed. Alfalfa is the chief export. Pop. 18,000.

Mostar. Town of Yugo-Slavia, in Herzegovina, formerly in the Austro-Hungarian territory of Bosnia. It stands on the Narenta, in a narrow valley within a district of great fertility, 33 m. S.W. of Sarajevo, with which it has rly. connexion. Many of the modern buildings are Italian in character, although the town is predominantly Turkish. There are many mosques and a fine Greek cathedral. It is the seat of a Greek and a Roman Catholic bishop. Tobacco is the principal manufacture. The single span foot bridge over the river, 95 ft. in length, is reputedly a Roman structure. Pop. 16,400.



1. *Acherontia atropos* (Death's Head), Britain. 2. *Amesia sanguinea*, N. India. 3. *Erastma pulchella*, India, China. 4. *Ophiodes fulonica*, Africa, Asia, America, Australia. 5. *Mimodes discolor*, W. Africa. 6. *Chrysiridia madagascariensis*, Madagascar. 7. *Pericallia galactini*, China.

India, Borneo. 8. *Ephyralis vaillantana*, Africa. 9. *Attacus atlas* (Atlas Moth), India, China, Ceylon. 10. *Daphnis nerii* (Oleander Hawk Moth), Britain, Asia, Africa. 11. *Zygaena rhipidulæ* (6-spotted Burnet), Britain. 12. *Gloriana ornata*, N. India.

MOTH: EXAMPLES OF SPECIES FROM ALL PARTS OF THE WORLD

Specially drawn for Harmsworth's Universal Encyclopedia by J. F. Campbell



13. *Euchloron megera*, Africa. 14. *Polythysana rubescens*, Chile. 15. *Smerinthus ocellatus* (Eyed Hawk Moth), Britain. 16. *Diacrisia purpurata*, Europe, Japan. 17. *Eustera brachyura*, Sierra Leone. 18. *Callimorpha dominula*, Britain. 19. *Nudaureta zaddachii*, S. Africa. 20. *Gynanisa maia*, S. Africa. 21. *Arctia caia*, Britain,

Asia, America. 22. *Milionia zonea*, N. India. 23. *Euschemia militaris*, India, China. 24. *Deilephila euphorbiae* (Spurge Hawk Moth), Britain, Asia. 25. *Ilistia flabellicornis*, India. 26. *Xanthopilepteryx superba*, Africa. 27. *Brahmaea wallichii*, N. India. 28. *Sphinx ligustri* (Privet Hawk Moth), Britain, to China and Japan

Most Favoured Nation Clause.

In commercial treaties, a clause granting preferential treatment to particular countries in regard to duties imposed on goods imported from those countries. Such preference is frequently conditional upon reciprocal treatment being granted by the most favoured nation or nations. See Free Trade; Protection; Reciprocity; Tariff Reform.

Mosul or **MOSSUL**. City of Mesopotamia, capital of a vilayet of the same name. It stands on the Tigris, about 220 m. N. of Bagdad. Opposite it, on the E. side of the river, are the vast mounds which are the remains of Nineveh. It is the seat of a patriarch of the Chaldean Catholics. Though not as prosperous as it was in comparatively recent times, it still does a considerable trade. It once was famous for its muslin, the name being derived from that of the town. From it an important caravan road leads through Rovanduz into N.W. Persia.

There are oilfields in the vilayet, and a concession to work them was granted to a British company before the Great War. By a decision of the Allies at San Remo in 1920, the validity of this concession was upheld, and the French Government were allotted the former German interests in the British company. Before and during the war Mosul was the headquarters of a Turkish army corps, and after the granting by the Allies of the armistice to Turkey in Oct., 1918, it was occupied by the British on Nov. 3. Pop. 80,000. See Mesopotamia, Conquest of; N.V.

Moszkowski, **MORITZ** (b. 1854). Polish composer. Born at Breslau, Aug. 23, 1854, he studied music at Dresden and Berlin. A fine performer, he gave up some time to concert tours, but became better known as a composer. His works include concertos for violin and piano, orchestral suites, many piano pieces, the opera *Boabdil* and the ballet *Laurin*. Pron. Moshkofski.

Motala. Town of Sweden, in the län or co. of Östergötland. It stands on the E. shore of Lake Wetter, 42 m. W.S.W. of Norrköping. The river Motala enters the lake close to the town. Industries include large machine shops, and engine works, the largest in Sweden. Pop. 4,000.

Motet. Vocal music in the contrapuntal style. Formerly it was set to either secular or sacred words, but since the beginning of the 14th century it has been exclusively reserved for the latter, and employed in the service of the Church. Its best period was from

about 1500 to 1600, contemporary with the golden age of its secular counterpart, the madrigal. The best composers of that century



Mosul, Mesopotamia. Street scene in the bazaar of the city

produced both kinds. More modern compositions by Haydn, Mozart, Cherubini, Mendelssohn and others, which bear the name, have little in common with the true motet style, and may be regarded rather as anthems or short sacred cantatas. See Counterpoint.

Moth. Popular name for an insect of the second division (Heterocera) of the scale-winged order (Lepidoptera); the first division (Rhopalocera) consisting of the butterflies. When only British insects were known to British naturalists it was easy to define the difference between a butterfly and a moth, but now that we have an extensive knowledge of the lepidoptera of the world it is found that there is no real distinction, and the continued separation of the two groups is more convenient for purposes of classification than scientifically correct.

The popular distinction has never really tallied with that of the naturalist, for the garden tiger moth and the burnet moths are generally regarded as butterflies on account of their bright coloration, and the skipper butterflies as moths because of their sober hues. Structurally, moths agree with butterflies, and the development of the individual exhibits the same four well-marked stages of egg, caterpillar, chrysalis, and winged adult. All butterflies are active in sunshine and most moths fly either at twilight (crepuscular) or during the hours of darkness (nocturnal); but even in this matter there is no strict uniformity, for some butterflies fly at

night as well as by day, and many moths fly only in sunshine.

There are two features, not very obvious except to the naturalist, in which moths differ from butterflies; in the latter the antennae have knobbed tips; the burnet moths make some approach to these in having clubbed antennae, but in the majority of moths the antennae are either thread-like or feathered. A butterfly's wings all work independently, but in the majority of moths the fore and hind wings are united in flight by a bristle on the hind-wing fitting into a catch on the forewing.

In the matter of size there is great diversity, for the atlas-moth of India may be only a fraction less than a foot across the outspread wings, whilst large numbers are smaller than the tiny clothes-moth. Economically, moths must be considered as inimical to human industry, for though the caterpillars of the silk-moths supply a valuable raw material, most moth-larvae attack our food crops, our fruit, stored grain, and even our clothing. On the other hand, many are destroyers of noxious weeds. See colour plate; Burnet Moth; Butterfly; Clearwing Moth; Eggar Moth; Emperor Moth; Goat Moth; Ghost Moth; Insect; consult also *The Moths of the British Isles*, R. South, 1909; *Butterflies and Moths of the United Kingdom*, W. E. Kirby, 1909.

Mothercraft. Art and science of motherhood. The experience of Infant Welfare Centres and similar bodies has shown that the education of mothers in the conditions of maternity and the proper care and feeding of children is an all-important factor in the preservation of child life. Even now, the ill-founded assumption that a woman by the mere fact of maternity becomes instinctively qualified for the care of children is too widespread.

The ignorance of mothers is responsible to a greater extent than is commonly supposed for the comparative feebleness of many eldest-born children, and learning by experience in this matter is perilous for the community. There is a growing movement for the definite instruction of prospective mothers in prenatal conditions, in the feeding of children, and in their proper treatment in the matter of clothing, hours of sleep, fresh air and kindred matters, both in normal and abnormal circumstances. There is now in London a school where a scientific course is given in mothercraft to mothers, expectant mothers, and nurses, and in time facilities will, it is hoped, be avail-

able on wider lines than have yet been attempted in Infant Welfare Centres throughout the country.

Modern science lays great stress on the breast-feeding of infants and on the methods of improving the health and general condition of the mother, in cases where natural feeding might otherwise have to be abandoned owing to abnormal conditions. In cases where the child cannot be naturally fed, rules are laid down for the preparation of food which shall as nearly as possible conform to natural food, and shall provide the vitamins which are essential to the health and growth of all children, especially in the early months of infancy. For the endowment of motherhood, a course frequently advocated by social reformers, a definite scheme has been proposed in New South Wales to cost £1,600,000 a year. See Child Welfare; Public Health; consult also Report of the National Conference on Infant Welfare, 1919.

Mother-of-Pearl. Inner coating of shells of many bivalve molluscs, including pearl oysters. It possesses some resemblance to pearls, and has much the same composition. On account of its beautiful iridescence and its high polish, mother-of-pearl is largely used in thin sheets to decorate articles of ornament and for the toilet, knife handles, and minor pieces of jewelry. Though mostly derived from the seas of the torrid zones, a good variety is obtained from Mediterranean pearl mussels.

Mother of Thousands. Popular name applied equally to *Saxifraga sarmentosa* and *Linaria cymbalaria*. The first named, also known as creeping sailor and wandering Jew, is a native of China and Japan, with roundish, lobed



h. mother of Thousands. Spray of leaves and flowers of *Linaria cymbalaria*

leaves, which sends out long pink runners giving rise to young plants at frequent intervals. The flowers are white with a few spots of yellow and red. *Linaria cymbalaria* is a much smaller plant,

native of Europe, rooting in the crevices of rocks and old walls. Its glossy leaves are ivy-shaped, and its spurred flowers are lilac-tinted.

Motherwell. Town of Lanarkshire, Scotland. It forms, with Wishaw, a police burg, the two having been united in 1920. Motherwell lies N.E. of the river Clyde, which it touches on the



S.W., 13 m. from Glasgow and 2 m. from Hamilton, and is served by the Cal. Rly. It owes its growth to its situation on the great coal-field; in addition

Motherwell arms to the collieries there are large engineering works, boilers and bridges being among its products. The public buildings in-



Motherwell. Town Hall, built in 1887

Valentine

clude a town hall and a hospital. Pop. 69,000.

Motherwort (*Leonurus cardiaca*). Perennial herb of the natural order Labiatae. A native of Europe and N. and W. Asia, it has a stout rootstock, and erect, four-angled, leafy stems. The opposite leaves are deeply cut into five or seven lobes, and the rosy-pink flowers are arranged in a series of whorls, which convert the upper part of the stem into a long leafy flower-spike. The whole plant is downy.

Moth Orchid (*Phalaenopsis*). Genus of epiphytes of the natural order Orchidaceae, natives of the Malay Archipelago and Eastern India. They have no pseudo-bulbs, but have permanent short leafy stems, and the broad leathery leaves are in two ranks. The large



Moth Orchid. Flower sprays of a hybrid form

showy flowers form a loose spray. They are supposed to bear some resemblance to moths on the wing. A beautiful species is *P. schilleriana*, from the Philippines, with large rosy flowers and mottled leaves.

Moths. Drama by Henry Hamilton, founded on Ouida's novel of the same name, and produced, March 25, 1882, at the Globe Theatre, London.

Motion (Lat. *motio*). In mechanics, change of position of a body. All motion is relative, e.g. a body moving on the earth is treated usually as though the earth were at rest, though it is moving round the sun, and the latter is moving through space, both of which motions are imparted to the moving body.

THE LAWS OF MOTION. Motion is governed by three laws first enunciated by Newton. They define the effect of external force on the motions of bodies, and may be stated as follows: (1) Every body continues in its state of rest or of uniform motion in a straight line, unless it is compelled by an impressed force to change that state. (2) Change of motion is proportional to the impressed force and takes place in the direction of the



Motherwort. Foliage and flower whorls. Inset, single flower

straight line in which the force acts. (3) To every action there is always an equal and opposite reaction.

The first law is sometimes known

as the law of inertia, since it asserts that no body can alter its state of rest or motion without outside influence; in other words, every body has inertia. The law also affords a definition of force, since we may say that force is that which tends to produce change of motion in a body on which it acts. It also states how a body will move when not acted upon by external forces—always in a straight line.

The second law states how the change of motion depends on the magnitude and direction of the force. By motion Newton meant momentum; and, in the same way, his impressed force includes the idea of time, for the change of momentum will depend on the time during which the force is acting, as well as on the magnitude of the forces. It must be noted that it is the *change* in momentum which is proportional to the impulse of the force; therefore it does not matter whether the body on which the force acts is originally at rest or in motion. The law gives a means of defining and measuring forces as well as masses. If a number of forces act in succession on the same mass, the changes produced in velocity will be proportional to the forces. Their relative magnitudes are measurable therefore in terms of the velocities they produce.

The third law states that all forces are of the nature of a stress between portions of matter, since every force must necessarily be accompanied by an equal and oppositely directed reaction. See Dynamics; Energy.

Motion. In music, the progression of voices or parts from note to note. The motion of a single part may be upward; downward; conjunct, proceeding by single degrees; disjunct, proceeding by skips. Comparing one part with another, motion may be of three kinds: similar, when the parts move in the same direction; contrary, when they move in opposite directions; oblique, when one is stationary while another moves up or down.

Motive (L. Lat. *motivum*, from *movere*, to move). Process of will which moves or excites a person to make a certain decision or choice. In the widest sense as a psychological term, motive is used for all the internal influences which assert themselves in a particular case as incentives to the will; in a narrower sense, it is only the ideas of the objects and possible effects of our action which are existent in consciousness, when the choice between several possible acts of will takes place. The term is also used in art, literature, and music in the sense of a leading subject or theme.

Motley, JOHN LOTHROP (1814-77). American historian. Born at Dorchester, Mass., April 15, 1814.



he was educated at Harvard, Göttingen, and Berlin. For a short time he was a member of the American legation in St. Petersburg; from 1861-67 was an American minister in Vienna, and from 1869-70 in London. He passed much time in England, and it was at Frampton Court, Dorchester, Dorset, that he died, May 29, 1877. One of his daughters married Sir William Harcourt.

Motley began his literary career with a novel, *Morton's Hope*, followed by articles in *The North American Review*, and by another novel, *Merry Mount*, 1849. He had already formed the idea of writing the history of the Dutch, and he spent some time in Holland, Belgium, and Germany studying the authorities. In 1856 his *Rise of the Dutch Republic* appeared in London in three volumes, and at once made him famous. It was translated into French, German, and Dutch, and was followed by the *History of the United Netherlands, 1600-68*, another great success.

Motley writes with real enthusiasm about the struggles of the Dutch for freedom, but the books are far removed from partisan writings, although later research has caused some of his judgements to be modified. His style is clear and vigorous, rising occasionally into passages of noble prose. He wrote also the *Life and Death of John of Barneveld, 1674*, a continuation of his earlier book, but hardly so successful. His correspondence was edited by G. W. Curtis, 1889. See *Memoir*, O. W. Holmes, 1898; *J. L. Motley and His Family, Further Records and Letters*, ed. S. St. J. Mildmay, 1910.

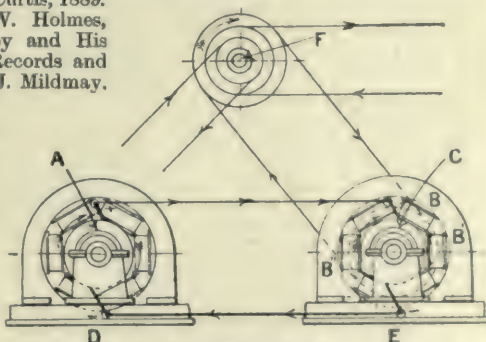
Motor. Word used in a number of senses. In machinery, a motor is a prime mover, e.g. a steam engine, an electric motor, an internal combustion engine, etc. In the latter connexion it is often used as an adjective, as motor car. In mathe-

matics, motor is a term for a quantity indicating the size, direction, position, and pitch of a screw. In anatomy and physiology, the word is used as designating or pertaining to particular nerve fibres.

An electric motor is a type of electric machine. The modern electric motor is an inverted dynamo, though historically the motor is older than the latter. Faraday appears to have been the first to produce rotary motion by means of electro-magnetic currents.

The first motor to operate on a practical scale was constructed by Jacobi of St. Petersburg, in 1834. It was actuated by a battery of 64 Grove cells, and propelled a boat on the river Neva at over two m. an hour. So long, however, as the immediate source of the energy was represented by the consumption of zinc in an electric battery, the electric motor had no possible chance as compared with steam-driven appliances; and it required the development of the dynamo to make the electric motor a machine for practical use. The relation of an electric motor to a dynamo is shown in the appended diagram. The armature A of the dynamo is driven by some other agent—steam, oil, or gas engine, water wheel or turbine; the current developed is carried to the field magnets B of the motor; these in turn compel the armature, C, of the motor to rotate. The axle of the motor may be connected directly or indirectly to the machine which is to be driven, which may be the toy-like drill of the dentist or the propeller of an ocean liner.

Electric motors are of two general classes, those using direct current and those using alternating current; while they are also distinguished as shunt wound, series wound, and compound wound; single-phase, two-phase, and three-phase: open, partly enclosed, and



Motor. Diagram illustrating principle of a dynamo, D, whose armature, A, is driven by steam engine or other prime mover. The dynamo actuates motor, E, by means of magnets, B, and armature, C, driving line shaft, F, from which power is distributed in various directions.

enclosed. A third type, the motor generator or rotary transformer, is also largely used. Open motors, that is machines in which the armature and field magnets are exposed to the air, are used where there are no special reasons for having those parts protected.

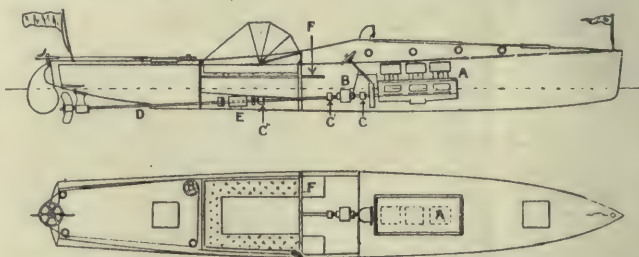
Motor generators or rotary transformers are employed where it is necessary to change the current as originally generated by the dynamo, *e.g.* alternating into continuous, or to change one voltage into a different strength. Thus a motor receiving a current of 10 amperes at 2,000 volts from its dynamo, may actuate another dynamo on the same axle in such a way that the latter will deliver a current of 200 amperes (theoretically) at 100 volts.

Electric motors are the agents by which, universally, machines of all kinds are electrically driven. A number of motors may all be actuated by the same dynamo or generator. Motors are installed on two principles, direct connected and transmission connected. In the former, each machine has its own motor directly connected to it; in the latter one motor drives a line of shafting on which are mounted pulleys or wheels from which the machines to be operated are driven. See Dynamo

Motor Bandits. Gang of criminals who terrorized Paris and the surrounding suburbs from Dec., 1911, to May, 1912. Seven persons were killed, a dozen persons seriously wounded, and a score of robberies carried out by the criminals, who never hesitated to use firearms, and escaped from their pursuers in motor cars on a number of occasions. The leaders, Bonnot, Garnier, Dubois, and Vallet, met their deaths after desperate sieges at Choisy-le-Roi, where Bonnot and Dubois were dynamited in a garage, April 28, 1912, and Nogent-sur-Marne, where Garnier and Vallet were besieged in a villa by 1,000 troops and police, May 14-15, 1912.

The first murder took place in the evening of Dec. 20, 1911, when three of the criminals in a new motor car which they had stolen intercepted a bank messenger named Gaby, in the Rue Ordener. He was shot dead in the brightly-lit street, his satchel confiscated, and passers-by held off with revolvers. By Feb. 27 they had been joined by Bonnot, "the demon chauffeur," and on that day shot dead a policeman on point duty by the Gare St. Lazare. On March 25, 1912, a new motor car, being driven from Paris to its owner at Nice, was

stopped on the Chantilly road. The chauffeur was shot dead, and his companion escaped by feigning death. The bandits then drove into Chantilly, where they held up the bank, murdered the cashier and bank clerk and two members of the public. Twenty-six members of the band figured at the trial, while four leaders had already perished in the two sieges.



Motor Boat. Diagram showing plan and section of a boat, length about 35 ft., beam 6 ft.; developing speed of 26-30 knots with 150-h.p. motor. A, 3-cylinder motor; B, reversing gear; C, C', C', universal coupling joints giving flexibility to the shafts; D, propeller shafts; E, thrust bearing or block; F, motor-man's seat

Motor Boat. Small vessel propelled by internal combustion engines or electric motors, as distinct from steam-driven vessels. Small open pleasure-boats of all kinds, and lifeboats generally prefer four-stroke petrol engines, as these are ready for action at a moment's notice and their fuel is cleanly. Powers range from four h.p. for motor-dinghies up to several hundred h.p. for racing craft, especially for those of the hydroplane or skimming-boat type. For decked-in boats, engines burning paraffin or heavy fuel-oils are most suitable. Many of these engines work on the two-stroke cycle, and in the larger powers—100 h.p. upwards—are slow-running. Heavy fuel marine motors are being widely adopted for coasting vessels.

Propellers driven by engines of moderate power in many cases have reversible blades, which can be

Reversing gears are either of the epicyclic train variety or of the sliding-pinion motor car type. Large engines are generally made reversible, and drive the propeller shaft direct through a fixed coupling. See Boat; Hydroplane; Internal Combustion Engine; Seaplane.

Motor Boat Reserve. British naval force formed for service during the Great War. For it several hundreds of motor launches were added to the fleet, these being wooden-hulled petrol-engined craft. They were officered and manned by the Royal Naval Volunteer Reserve, and used for patrol work, smoke screen making, as at Zeebrugge, April 23, 1918, and such-like auxiliary purposes. After war ended such of the launches as were not required for naval purposes were sold and the personnel demobilised. See The Motor-Launch Patrol, G. S. Maxwell, 1921.

THE MOTOR CAR AND ITS MECHANISM

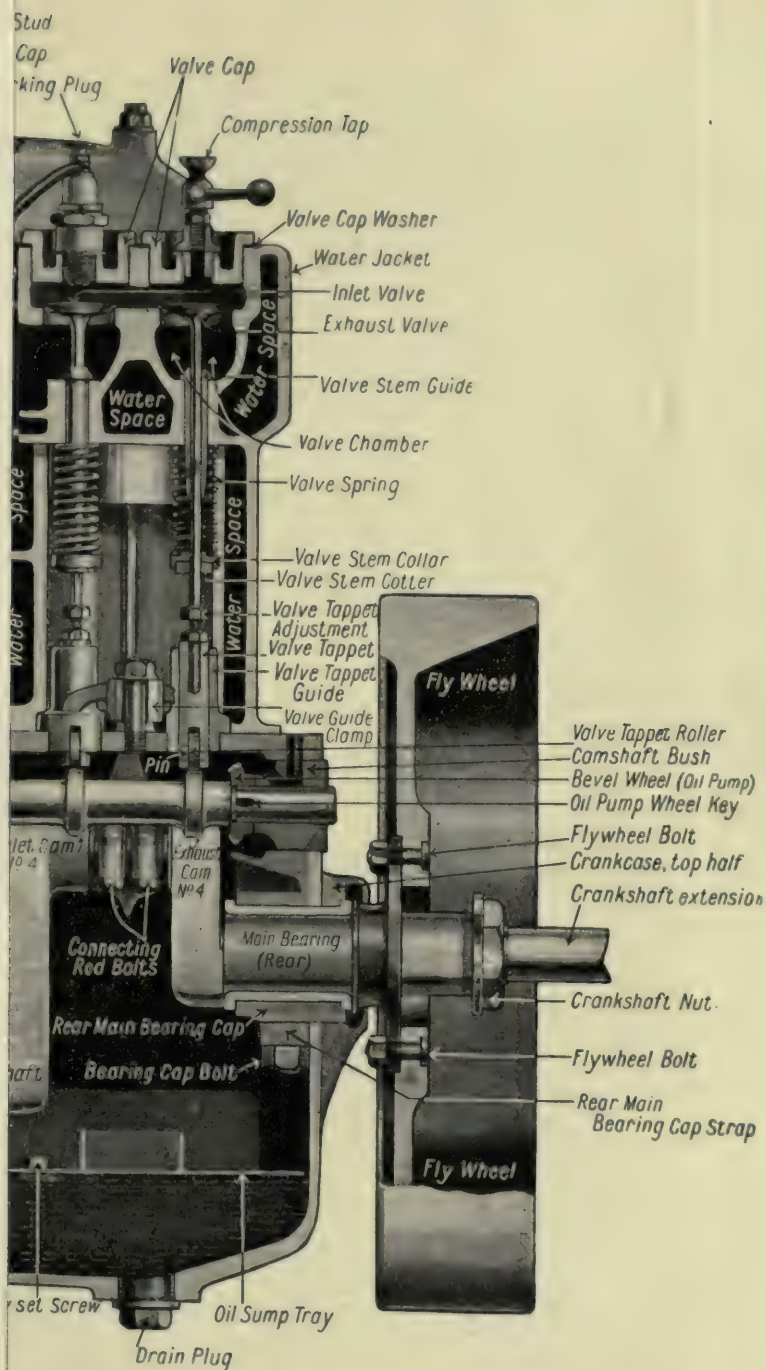
Right Hon. Lord Montagu of Beaulieu

In addition to this major article there are entries on Carburettor; Clutch; Gear; Magneto; Sparking Plug and other accessories. See also Internal Combustion Engine and plate of Motor Car

The credit for producing the first self-propelling road vehicle is usually given to Nicolas Cugnot, who in 1768-70 conducted some very moderately successful experiments with a primitive steam carriage. The best speed attained was 4 m. an hour. Richard Trevithick's steam vehicle, which in 1802 travelled from Camborne to Plymouth, marked a decided advance in design, and attained a speed of 9 m. an hour on the level. In 1803-4 he ran a steam coach

on the London streets, 103 years before the motor 'bus, as we know it to-day, came into use.

Some really practical vehicles began to appear in England in 1825, made by Gurney, and by 1836 the road steamer had been developed sufficiently to arouse the determined opposition of railway and stage-coach companies, who combined to kill the new competitor. Various laws were made, and in 1865 it was enacted that every road locomotive should be



Specially designed by Geoffrey Watson for Harroworth's Universal Encyclopedia

VOBLOC ENGINE OF A MODERN MOTOR CAR

Magneto also omitted to simplify diagram

preceded at a distance of 100 yds. by a man on foot carrying a red flag to warn passengers of its approach, and should not exceed 4 m. an hour in speed. This law at one blow crippled a great industry, and deprived the community of what already promised to be a very valuable means of transport. When suppressed, the London steam coaches alone had travelled over 4,000 m. without serious accident, and become extremely popular. It is also worthy of record that a vehicle built by Ogle & Summers, and tested before a special commission of the House of Commons in 1830, attained a maximum speed of 35 m.p.h. on the level, and, though not provided with springs, ran 800 m. over roads which to-day would be considered very second-class without a breakdown.

In France road locomotion suffered from want of financial support till after the Franco-Prussian War. In 1872, M. Bollée drove a steam omnibus from Paris to Vienna at an average speed of 18 m.p.h. Six years later appeared the steam-driven tricycle of MM. Bouton and Trepardoux, working conjointly with the Comte de Dion. Serpollet followed in 1887 with a tricycle, the first vehicle to use a "flash" boiler. The year 1884 witnessed what is, perhaps, the most important event in the history of automobilism—the introduction by Gottlieb Daimler of the petrol gas motor, in which the ignition was by means of a red-hot platinum tube, the advantages of which were speedily recognized. In 1894, M. Pierre Giffard, editor of *Le Petit Journal*, organized a motor race from Paris to Rouen, offering valuable prizes for the self-propelled vehicles which should prove most easily handled, cheapest to run, and safest for passengers. A steam car came in first, but the chief prize went to a petrol-driven car. In the following year a race from Paris to Bordeaux was held, and the steam cars were hopelessly beaten. To-day the petrol engine is used by the vast majority of road passenger and commercial mechanically-propelled vehicles.

General Use of Motors

The enormous multiplication of motor vehicles, numbering about 853,900 in Great Britain in 1921, shows the popularity of automobilism in its various forms. In 1921 tax was paid in the United Kingdom on over 226,000 cars, 370,000 motor cycles, and over 22,000 heavy vehicles. The U.S.A. has the largest number of motor vehicles, estimated at over 9,000,000, including 3,000,000 used on farms. The services of motor vehicles dur-

ing the Great War, 1914-19, were such as to bring about an almost revolutionary change in warfare. Without them the huge armies could not have been fed or supplied with munitions.

The speed records made by the motor car eclipse those made by any other form of locomotion, the aeroplane excepted. Speeds of well over 120 m.p.h. have been attained on several occasions on racing tracks, and over 100 m. covered in 60 mins. In June, 1907, S. F. Edge travelled 1,581 m., 1,310 yds. in 24 hours on the Brooklands track. Some nine years later, Mulford increased the distance to 1,819 m. on the Sheepshead track, New York, his speed averaging 75·8 m.p.h. The endurance of the car, as well as of the driver, has been severely tested in some notable transcontinental journeys, among which that of Prince Borghese from Peking to Paris in 1907 is, perhaps, the most remarkable.

THE PETROL CAR. The following is a brief description of an ordinary touring car, which may be regarded as made up of two main items, the chassis and the body. The first includes the metal frame supporting the body and its attachments—engine, radiator, carburettor, silencer, clutch, gear-box, transmission-gear, springs, axles, wheels, brakes, and the various operating levers. The body placed on a chassis may vary as regards shape and passenger accommodation according to the length of the chassis and the individual requirements of the purchaser.

Frame and Engine

The frame is a light, strong steel structure of two side members, running from end to end and connected by three or more cross members. In some cases it is built up from separate parts; in others pressed from a single sheet of metal. The front quarter of the frame is sometimes considerably narrower than the rear, to enable the steering wheels to be turned freely through a considerable part of a circle in either direction.

The engine is attached either directly to the front part of the frame or to a small sub-frame connected with the other. It consists in most instances of two, four, six or more vertical cylinders, bolted to the top part of a crank-case, through which are laid the main bearings, to support the crank-shaft. The bottom part of the case is detachable for inspection and adjustment purposes, and so shaped as to form an oil reservoir. The case also accommodates a shaft with cams or projections, which, as they revolve, push up tappet rods operating the valves of

the cylinders. The cam-shaft is geared to the crank-shaft, and revolves at half its speed. Sometimes there is an overhead cam-shaft which is similarly geared to the main shaft.

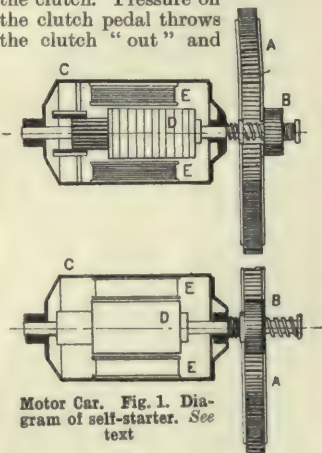
Electric Starters

The engine is usually started by a cranked handle at the front of the car. The stem of the handle slides in a socket, and has a notched end which engages with studs on a continuation of the crank-shaft, if turned in a clockwise direction, but slips over them if revolved in the other. When the engine begins to fire the studs over-run the notches, and the handle is automatically disengaged. Many cars have now mechanical compressed air or electric starters which enable the driver to set the engine in motion without leaving his seat. Electric starters are most popular, as they can be combined with ignition and lighting apparatus. The simplest form employs a dynamotor, geared to the engine or gear. Under running conditions the dynamotor is driven and generates current, which goes to storage accumulators. To start the engine, current from the accumulators is switched into the dynamotor, and it acts as a motor, turning the engine or gear till the engine begins to run on its own account.

Fig. 1 shows the mechanism of a self-starter. A is a gear wheel attached to flywheel or flywheel shaft of the engine, B is the pinion on axle of starting motor C. When the self-starter is not in use, B is in position shown in top part of figure, and the armature D is out of alignment with its field magnets EE. To use the starter a plunger switch passes current from a storage battery through the field magnets which pull the armature back as shown in the lower half of the figure, and with it the pinion B into gear with A. The armature is at the same time rotated, so turning pinion and driving-wheel A and starting engine. When the latter starts the self-starter is automatically thrown out of gear.

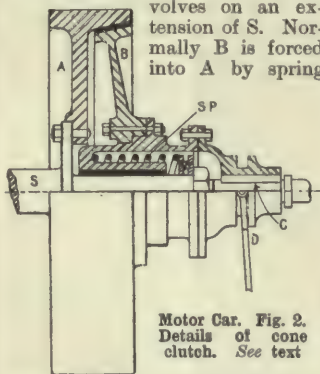
TRANSMISSION OF POWER: THE CLUTCH. Unlike a steam locomotive, a petrol motor cannot be started from rest unless the engine be already in motion. The engine must get up some speed before it has sufficient power to propel the car. Consequently, a friction clutch, which comes into action smoothly, is used just behind the engine to connect or disconnect the engine from the transmission gear at will. One part of the clutch is driven by the fly-wheel, the other part is mounted on a shaft which forms the first stage of

the transmission. When a pedal is released and a strong spring allowed to press the parts together, the connexion is made, and the engine drives the mechanism beyond the clutch. Pressure on the clutch pedal throws the clutch "out" and



Motor Car. Fig. 1. Diagram of self-starter. See text

frees the engine. A common form of cone clutch is shown sectionally in Fig. 2. Engine fly-wheel A, fixed in crank-shaft S, has a wide rim, slightly coned inside. Clutch-plate B has a wide rim coned externally on the same taper as A, and covered with leather, riveted on. (In some clutches the leather is attached to the fly-wheel.) B revolves on an extension of S. Normally B is forced into A by spring



Motor Car. Fig. 2. Details of cone clutch. See text

SP, and the engine power is transmitted through C from shaft S. To disconnect the engine, B is drawn slightly to the right by fork D of the clutch pedal, out of engagement.

A multiple clutch is illustrated by Fig. 3. Fly-wheel A, crank-shaft S¹, and casing B are bolted together. Drum C is fixed on shaft S², B is grooved lengthwise internally; C externally. The ring-like plates P (marked in solid black) are so shaped that alternate plates fit B and C respectively and are carried round by them, though able to move endways. Spring SP forces in cup D and presses the

plates together against a flange on C, and the total friction makes the whole clutch revolve as if solid. If pressure on D be relieved by the pedal the plates fall apart.

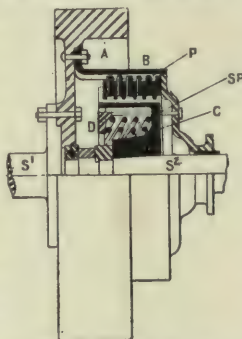
The single-plate clutch, having a plain or asbestos-covered flat disk forced into contact with a flat surface on the fly-wheel by a system of three levers, also enjoys a considerable vogue.

THE GEAR BOX. The petrol engine, being essentially a high-speed motor, must revolve much faster than the road wheels, and, as its power falls off rapidly with the rate of revolution, means must be provided for altering the gearing-down to suit the running conditions. On the level it may suffice if the engine crank-shaft turns four times for every revolution of the road wheels, since under this condition the car can easily be moved fast enough to keep the engine speed high. But when a hill is encountered, the greater resistance slows the engine down, and reduces its power just when it is most needed. The driver can, however, alter the gearing by the movement of a lever so that the engine may make, say 6, 11, or 16 revolutions per wheel revolution, and get in a larger number of power strokes during every ten yards the car progresses. The engine is thus enabled to do useful work at the same rate as before, though the velocity of the car is reduced.

Most change-speed gear boxes are next to the clutch, and give three or four different speed ratios, besides a reverse gear. The last is essential, since a car engine is designed to run in one direction only and it would otherwise be difficult to turn big cars in narrow roads.

The principles of a four-speed box are explained by the accompanying diagram (Fig. 4). Shaft A, driven by the clutch, embraces shaft C, which projects from the rear of the box and will hereafter be termed the gear box shaft. To A are fixed pinion D and the internally-toothed ring N. The lay or intermediate shaft B carries fixed

pinions E (meshing with D), L, H, and F. Pinions M, K, and G (the two last joined together) revolve with C, but can be moved endways on it in either direction by forks in collars X Y, forming part of the gear-changing mechanism. As shown, all the sliding pinions are in their neutral positions, and A and B are able to revolve without influencing C. To throw in the first speed, K G are moved to the right, and G meshes with F. For second speed, K G are slid to the left, and K engages H. Third speed is obtained by meshing M with L; and the fourth speed, or "direct" drive, by slipping M into N, thus locking A and C together. Reversing is accomplished by means of a special pinion (not shown) which connects F with G. The three forks by which the forward and reverse gear sliding pinions are moved are attached to sliding rods, with notched lugs on their upper sides. A short arm

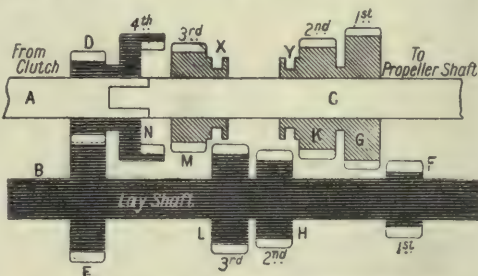


Motor Car. Fig. 3. Diagram illustrating multi-disk clutch. See text

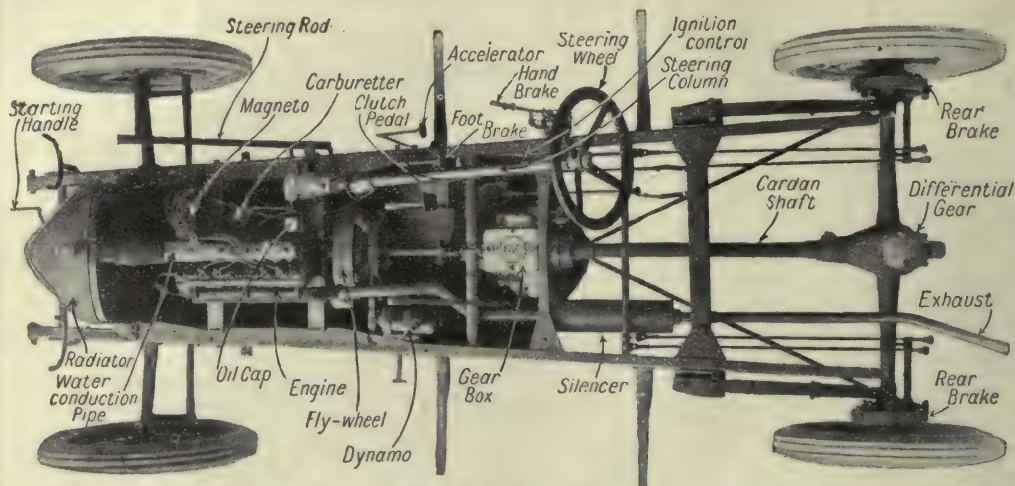
projecting from a shaft turned by the gear-changing lever can be moved sideways into any of the lugs. "Gates," or openings in the lever quadrants, make it impossible to traverse the arm and engage any gear while any other gear remains "in." When the lever is in the neutral position, motion cannot be imparted to the driving wheels (even if the engine be running and the clutch engaged), as there is no gear connexion between A and C.

Principle of Epicyclic Gears

Epicyclic gears are used on a few types of car, of which the Ford is a leading example. In the epicyclic gear shown in Fig. 5, A is the power or engine shaft, B pinion secured on A and engaging with pinion C formed integral with pinions D and E, F is the epicyclic axle, G the propeller or driving-



Motor Car. Fig. 4. Diagram of four-speed gear box



Motor Car. The chassis of a 1921 type of standard light car, photographed from above

By courtesy of The Autocar

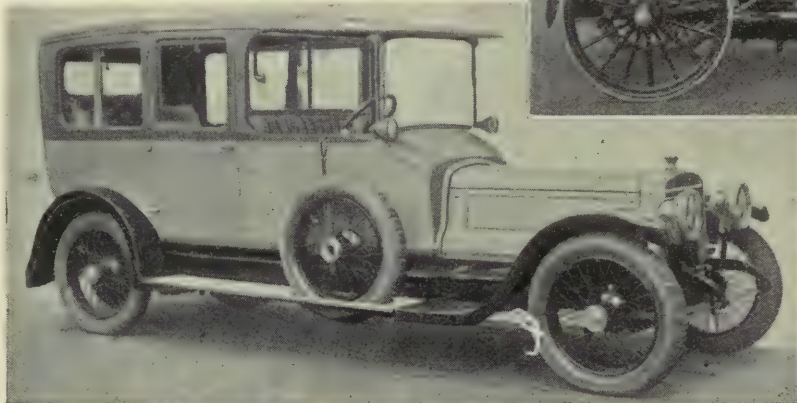
under the reaction of the drive. This tendency is resisted either by two rods running from projections on the top and bottom of the casing to a cross member of the frame; or by a tube enclosing the propeller shaft, bolted at the rear end to the differential gear box, and provided with a ball-joint at the front end, where it connects with the change gear-box casing and protects the universal joint.

The gear-reduction is distributed between (1) the gear box, (2) the differential, and (3) the chain wheels, if chain drive be used. When the engine is driving direct, the gear box, the only variable factor, is in effect eliminated.

To make a smooth gear change without shock, it is necessary that the two gear wheels about to be engaged shall have the same circumferential speed. The speed of

the shaft C (Fig. 4), permanently connected with the road wheels, cannot be altered quickly, but shafts A and B can be slowed by de-clutching or throttling-down the engine (all gears being disengaged); or accelerated by speeding up the engine. To pass from a lower to a higher gear (that is, one which moves the car faster) the driver throttles-down the engine and de-clutches. Shafts A and B lose speed by friction, and a slight pressure on the lever causes the sliding pinion, previously moving too slowly relatively to its fixed partner, to engage. The clutch is at once thrown in

and the engine accelerated. To change down, A and B must be momentarily speeded-up by putting the gear lever in neutral position and allowing the engine to quicken till the teeth on the fixed gear wheel are moving as fast as those on the sliding gear to be engaged. The clutch is meanwhile almost disengaged, so that it may slip if the gears take hold while

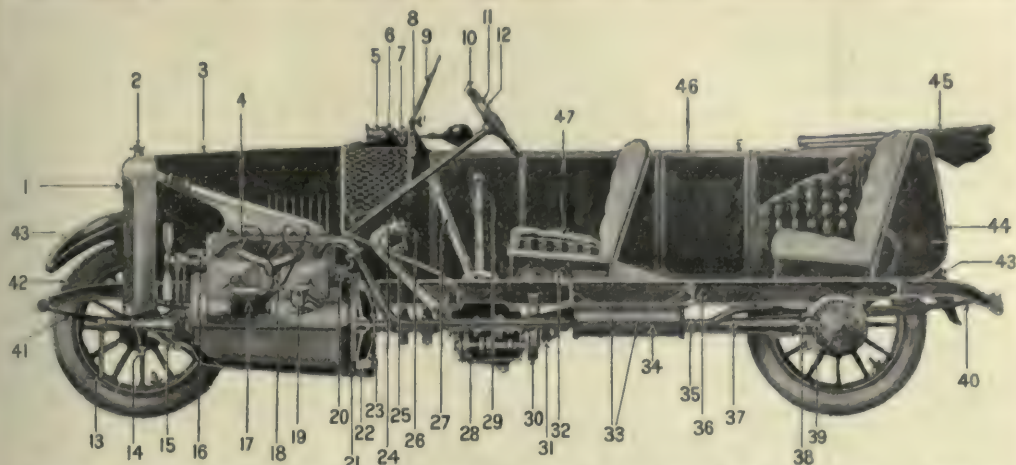


Motor Car. Contrasting types illustrating development of the private motor car in 24 years. Top, right, 6 h.p. 1-cylinder Daimler car, submitted to the Prince of Wales (Edward VII) in 1897; below, 45 h.p. 6-cylinder Daimler car, 1921 type

By courtesy of Daimler Motor Co., Ltd.

travelling at somewhat different rates.

STEERING GEAR. The steering wheel is mounted on the upper end of a shaft which runs through a tubular fixed pillar and has a worm at its lower end. The worm engages with a toothed quadrant revolving in a vertical plane and turning a short shaft, from which projects a short ball-ended



Motor Car. Pictorial diagram showing principal parts:—1. Radiator. 2. Radiator filler cap. 3. Bonnet. 4. Engine. 5. Bulb horn. 6. Petrol filler cap. 7. Petrol tank. 8. Dashboard. 9. Wind screen. 10. Steering wheel. 11. Hand throttle control. 12. Ignition control. 13. Starting handle. 14. Front axle. 15. Steering arm. 16. Dynamo. 17. Magneto. 18. Wiring to sparking plugs. 19. Oil filler. 20. Electric engine starter. 21. Pinion drive for starter. 22. Fly-wheel. 23. Cone clutch. 24. Clutch pedal. 25. Throttle pedal. 26. Brake pedal. 27. Brake lever. 28. Gear box. 29. Gear lever. 30. Brake. 31. Universal joint. 32. Tool space. 33. Transverse frame members. 34. Silencer. 35. Exhaust pipe. 36. Longitudinal frame members. 37. Torque tube. 38. Driving shaft. 39. Bevel drive and differential. 40. Rear spring. 41. Front spring. 42. Tyre. 43. Mudguard. 44. Body boot. 45. Hood. 46. Body frame-work. 47. Cushioned seat

lever. A rod connects this lever with another lever projecting from the back of the right-hand front wheel stub axle forging. A movement of the steering wheel causes the axle to rotate horizontally on a pivot through part of a circle, deflecting the wheel mounted on it. The two road wheel axles are connected together by a transverse rod attached to arms which are not at right angles to the axles, but converge towards, or diverge from, one another.

BRAKES. Two independent sets of brakes are fitted to a motor car; usually a band-brake, on the wheels direct or through the transmission gear, and internal expanding brakes pressing on drums attached to the driving wheels. The first is generally controlled by a pedal, the second by a hand lever.

Fig. 8 shows the working of an expanding brake. A is the brake strap riding on rollers B, B', B'', B''' of spider C, and D a rod attached to the rim of the brake to prevent it from turning. E is a toggle gear; F, operating arm pivoted at G and linked to toggle, H being the operating

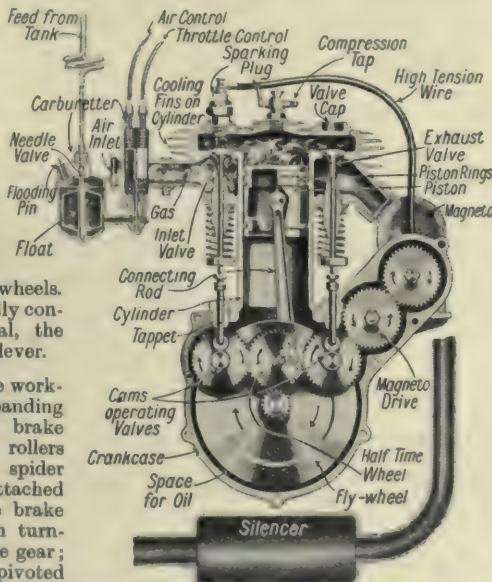
connexion. A spring J is connected to a fixed arm K, holding the arm F back and so keeping the brake strap clear of the brake drum M which is attached to the wheel. To operate the brake the connexion N is drawn to left when the link L is pressed downwards, thus spreading toggle arm and expanding brake strap against the brake drum.

WHEELS. Wire-spoked wheels, being stronger and lighter than

wooden "artillery" wheels, have become popular for touring cars, though much more difficult to clean. This defect is remedied partly by enclosing the spokes with vulcanite or metal disks. Wheels fashioned by welding two metal stampings together are as easy to clean as wooden wheels and considerably stronger. All up-to-date cars have interchangeable wheels which can be quickly detached from their axles, or wheels with detachable rims.

STEAM CARS. Leaving heavy lorries out of consideration, steam-driven cars have fallen into disfavour, though in quietness and smoothness of running they equal some of the best petrol cars, but are less cleanly, more troublesome to look after, and less quickly started up; and their water supply must be replenished frequently. Three-cylinder single-acting poppet-valve and two-cylinder double-acting slide valve engines are used. The boiler is of the flash or semi-flash variety, heated by a paraffin burner automatically controlled by the steam pressure. The drive is through a differential gear.

ELECTRIC CARS. Though the efficiency of accumulator batteries has been increased considerably in recent years, the electrically driven car is still only in its infancy. The road-wheels are driven either by motors mounted on the axles, or through a propeller shaft and differential gear similar to those of a petrol car. No clutch or change-speed gear is required, and reversal



Motor Cycle. Pictorial diagram showing arrangement of internal combustion engine. See next page

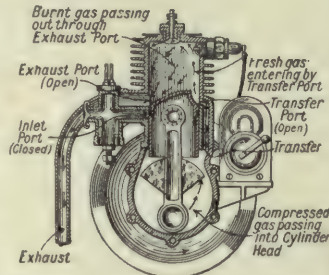
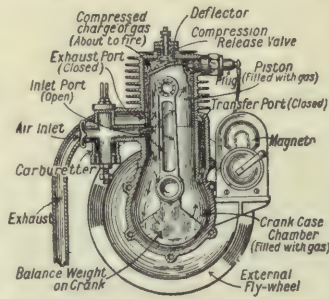
of current reverses direction of travel. The two serious obstacles in the way of the electric car are the cost and slowness of recharging the batteries, and the limited energy capacity of accumulators relatively to their weight.

Bibliography. The Complete Motorist, A. B. Filson Young and W. G. Aston, 8th ed. 1915; Motors and Motoring, H. J. Spooner, 13th ed. 1919. Consult also The Car Road Book and Guide, ed. Lord Montagu, The Motor Car Year Book, and The Motoring Annual and Motorist's Year Book.

Motor Cycle. Broadly defined as any power-driven two or three wheeled vehicle. The definition includes certain types of three-wheeled cars, but the motor cycle proper is a two-wheeled power-driven vehicle, which may or may not have attached to it a sidecar for the carrying of passengers, etc. Nearly all such machines are driven by one, two, three, or four cylinder internal combustion engines, the power being transmitted by means of a belt or chain, or the machine is shaft driven.

Sir Thomas Parkyn exhibited the first power-driven cycle in 1881 fitted with a steam engine, but it was not till 1895 that any real advance was made. In that year the internal combustion engine was adopted, though progress was slow owing to the unreliability of ignition and carburation. From 1907, however, motor cycles made such rapid strides that they have become one of the most popular of all power-driven vehicles.

The h.p. of the motor cycle varies from $1\frac{1}{2}$ up to 8 or 10. The lightweight motor cycle is the most popular solo machine, e.g. without a sidecar attachment, and its engine is usually 2 $\frac{1}{2}$ –3 h.p. Machines of a greater h.p. are generally classed as heavyweights.



Motor Cycle. Diagrams of two-stroke engine, showing working. Top, charge about to be fired; bottom, exhaust gases escaping and new charge entering cylinder. See text

For powers up to 4 h.p., single-cylinder and twin-cylinder horizontally opposed four-stroke engines, and single-cylinder two-stroke engines are used. High-powered machines have twin-cylinder V-type, twin-cylinder two-stroke, or four-cylinder four-stroke motors. The horizontal "twin" engine, with both pistons moving outwards and inwards simultaneously, has proved exceptionally well suited for cycle pro-

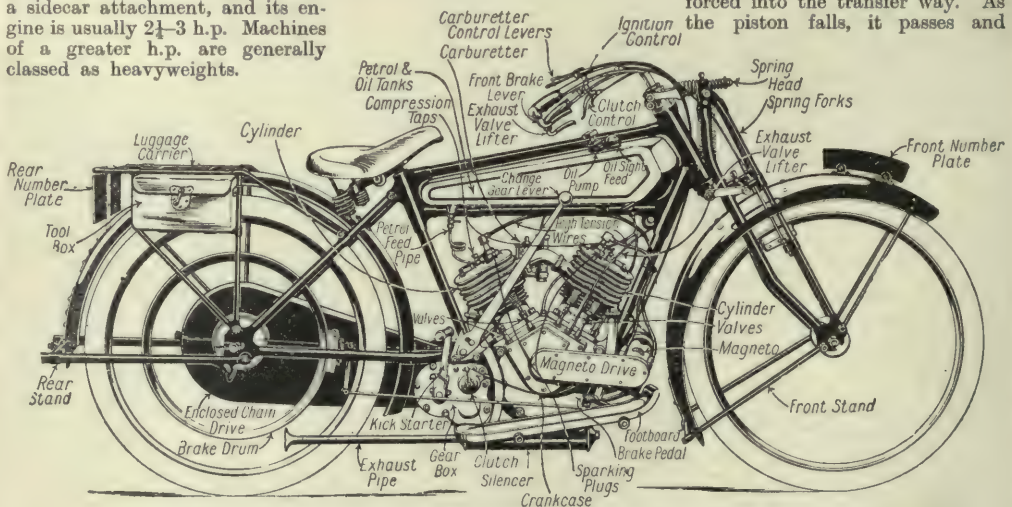
pulsion. With but few exceptions, motor cycle engines are air cooled,

With the exception of lightweights most motor cycles are provided with two, three, or multiple-speed gears, or flexible gearing transmission enabling them to be driven with ease in traffic or up hills. The gearing includes free engine on each gear provided by means of a clutch, hand or foot controlled. The more powerful machines are provided with a kick starter enabling the engine to be started with the least possible exertion, and a compression release valve for the same purpose. The supply of proper mixture of petrol, benzol, etc., and air to the engine is semi-automatic, making the control of the machine one of great simplicity. The provision of wind screens for passengers in sidecars, special pillion seats on the carriers of solo machines, dynamo electric lighting, etc., have added to the comfort of motor cycling.

The principles of the two-stroke engine, which is the most popular type for light-weight motor-cycles, are shown in diagrams in the next column.

The two-stroke engine is so called because there is one power impulse in every two strokes of the piston-rod as compared with one in four in the four-stroke engine.

The upper diagram shows the engine in section with the piston at the top of its stroke, and the compressed charge about to be fired. Exhaust and transfer ports are closed, inlet port open, the fresh gas flowing into the crank-case and lower cylinder. On the downward stroke after the explosion the fresh gas in the crank case and lower part of the cylinder is compressed and forced into the transfer way. As the piston falls, it passes and



Motor Cycle. Diagram showing the principal parts of a modern twin-cylinder motor cycle

uncovers the transfer port, allowing the new gas to flow into the cylinder head. Just before this occurs the exhaust port is uncovered to permit the burnt gas to escape.

In the lower diagram the piston is at the bottom of its stroke. Burnt gas is passing out through the exhaust port (assisted by the deflector) and new gas is entering through the open transfer port. As the piston rises all ports are closed, and the gas is compressed until the position in the first diagram is reached again, and the explosion takes place.

The motor scooter is an American development of the motor cycle which was introduced into Great Britain in 1920. Driven by an engine of about $1\frac{1}{2}$ h.p., with wheels of a foot or so in diameter, the machine is easily stored, light, and is used in America largely by business men for travelling.

During the Great War over 50,000 motor cycles were employed by the British alone for dispatch riding and similar work.

By the Roads Act, which came into force Jan., 1921, every motor cycle must be provided with registration letters and numbers, and must carry a licence card fixed in a prominent position on the near side of the machine or sidecar. The licence for motor cycles not exceeding 200 lb. in weight is £1 10s., and exceeding 200 lb., £3, with an extra fee of £1 for a sidecar or trailer. In the first quarter of 1921, 186,000 motor cycles were registered under the new law, yielding a tax of £488,600. Every motor cyclist must be over 14, have a driving licence, and must produce it when called upon by any police officer. With every cycle licensed a registration book is issued, in which particulars of the machine and its owner are given.

Every motor cycle under the law must be fitted with two independent brakes, either of which is capable of bringing the machine to rest; some warning device, as horn, bell, etc.; and must have a silencer fitted to the engine. See Internal Combustion Engine; Magneto; Sparking Plug; Throttle.

Motor Licence AND TAX. Duty levied on motor drivers and motor vehicles. Under the Roads Act, which came into force Jan., 1921, all private motor cars are taxed at a flat rate of £1 for every horse power per annum, and electric cars with a fixed sum of £6. Motor cars, the licences for which are taken out for one quarter of the year only, need only pay 30 p.c. of the full duty otherwise payable. The details which have to be filled in on the

application form include actual horse power, registered number if any, type of body, number and date of engine, names of car and manufacturer, etc.

Commercial vehicles are taxed according to type. Tramway cars are taxed 15s. per annum, other vehicles seating up to 5 persons £15 in London, and £12 elsewhere, increasing according to the seating accommodation up to £84 in London and £70 elsewhere for more than 32 persons. Vehicles used for carrying goods are taxed according to their weight, the taxes being: not exceeding 12 cwt. £10, between 12 cwt. and one ton £16, between one and two tons, £21, etc., up to £30, exceeding four tons. These weights for taxation are for unladen vehicles. Tractors and certain other farm machines, motor driven, are taxed 5s. All drivers of motor cars must be provided with a driving licence, costing 5s. For the taxation, etc., of motor cycles, see under that heading.

Motor Marks. Devices of one letter or two and a number displayed on plates or otherwise on the front and back of motor vehicles for purposes of registration and identification. The letter or combination of letters is the index mark of the county council, county borough council, or similar body, and the number is the registration number assigned by such body to the owner of the vehicle. The use of motor marks was first enforced in the United Kingdom in 1904. The plates are rectangular and the characters for privately-owned vehicles white on a black ground. For a vehicle on trial by a manufacturer or dealer in motors a coloured general mark, preferably red and white, is often used, consisting of the council's index mark together with, though clearly separated from, some other distinguishing letter or letters and a distinguishing

number; if the general mark is used on more than one vehicle at the same time, different distinguishing numbers are used. A vehicle attached to another must bear an identical mark. The front plate of a motor cycle must be readable from either side. Cars owned personally by the king are the only ones which bear no mark.

Since 1920 a car must be registered where it is kept and used. Formerly it could be bought and registered in Coventry and driven home by an owner living in Kent. The system of allotting index marks to the councils was governed by the populations of the districts concerned. With certain exceptions, stated below, single letters were allotted in alphabetical order to the following English and Welsh localities: London, Lancashire, the West Riding, Kent (which has also KT and KN), Staffordshire, Essex, Middlesex, Durham County, Liverpool, Glamorganshire, Cheshire, Manchester, Birmingham, Surrey, Derbyshire, Devonshire, Leeds, Sheffield, Northumberland, and Somerset. G was retained for Glasgow, I and Z were not used singly, Q was not used at all, S was assigned to Edinburgh, and V to Lanarkshire. When the single letters were exhausted two were used. I and S, preceded or followed by another letter, were reserved for places in Ireland and Scotland respectively, and Z occurs only in the combination IZ, co. Mayo. Besides the original A, London was later allotted various L combinations, e.g. LA, LB, LC. International marks may be recognized by their oval plates and by the reversed colours of characters and grounds—black on white.

Motor Nerves. Nerves which conduct impulses from the brain or spinal cord to the voluntary or involuntary muscles, and cause them to contract. When, for instance, a person wishes to raise his arm, an impulse starts from the brain and, travelling down the motor nerves, stimulates the appropriate muscles, which perform the action intended. See Nerve.

Motor Sign. Warning and direction sign on roads for the guidance of motorists. Such signs have been erected upon most of the main roads of Great Britain by the Automobile Association and other motoring bodies. The Ministry of Transport carried out an investigation into the roads of the country, reclassified them, and in 1921 suggested standard signs giving plain warnings, and signposts which would give every road a route number, letter for its class, e.g. first or second, etc. See Roads.



Motor signs suggested in 1921 by the Ministry of Transport to warn motorists of the nature of the road

Motril. Town of Spain, in the prov. of Granada. It stands on a small river about a mile from the



Motril arms

Mediterranean, 34 m. by road S. by E. of Granada. In a fertile district, where cotton, sugar cane, and sugar beet are grown, it has sugar mills and manufactures cotton, flour, soap, wine, and brandy. It exports dried figs, almonds, barley, etc., and there are antimony, lead, zinc, and copper mines in the neighbourhood. The ancient port of Granada, the port of Motril now implies Calahonda and the roadstead of Baradero. Pop. 18,400.

Mott, Sir FREDERICK WALKER (b. 1853). British physician. Born at Brighton, he received his medical education at London University College and Hospital, where he was gold medallist, 1881.

A specialist in neurology and mental subjects, he was Croonian Lecturer at the Royal College of Physicians, 1900, and delivered the Lettsom Lecture of the Medical Society, 1916. He served in the R.A.M.C. during the Great War, and was consulting physician to Charing Cross Hospital. Among his publications are *The Brain and the Voice in Speech and Song*, 1910; *Nature and Nurture in Brain Development*, 1914; *War Neurosis and Shell Shock*, 1919. He was knighted in 1919.

Mott, JOHN RALEIGH (b. 1865). Founder of the World's Student Christian Federation. Born in New



J. R. Mott, American evangelist

York, May 25, 1865, he was inspired by an address by J. E. K. Studd, the Cambridge cricketer, at Cornell University. He assisted in the formation of the Student Volunteer Movement for Foreign Missions, and became general secretary of the World's Student Christian Federation in 1895, and of the International Committee of Y.M.C.A. Associations in 1915. A capable organizer and lecturer, Mott visited almost every university in the world in connexion with Christian Student propaganda,

and wrote *Strategic Points in the World's Conquest*, 1897; *Future Leadership of the Church*, 1908; *Decisive Hour of Christian Missions*, 1910; *The Present World Situation*, 1914.

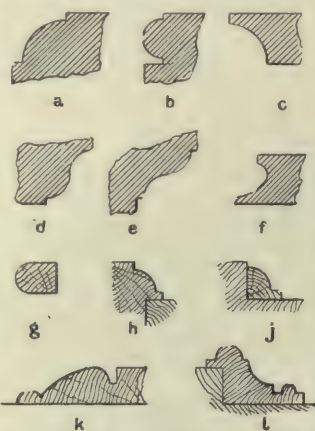
Motto. In heraldry, short, pithy sentence, sometimes a single word, usually placed on a scroll beneath the coat of arms or crest, or round the shield. They were personal to the bearer, but were commonly perpetuated in families.

The motto differs from the Guerre, war cry, or slogan, which is placed on a scroll above the crest or badge. See Heraldry.

Motza. Name given to the unleavened bread eaten by the Jews at the Passover. There are about seven large, dry cakes or biscuits to a pound of motza bread, one egg being used in each cake. It is made in the home, or can be bought at a Jewish grocer's or baker's, in which cases the motza should be soaked in water and drained before eating. See Passover.

Mouflon OR **MOUFON.** Species of European wild sheep, *Ovis Musimon*, found only in Corsica and Sardinia. It is about 28 ins. high at the withers, and the wool of the upper parts is reddish brown, with white on the underparts. The curved horns in the male sometimes reach 3 ft. in length. The animals are found in flocks on the highest peaks of the hills, and are very difficult to approach.

Moulding. In architecture and joinery, the surface formed on any piece of stone, timber, or other material by casting or cutting according to a continuous pattern:



Moulding. Types in use in architecture and joinery. a, ovolo; b, torus; c, cavetto; d, ogee or cyma recta; e, cyma reversa or reverse ogee; f, scotia; g, bead; h, solid or "laid-in" moulding contrasting with i, stuck or planted moulding; k, compound moulding, quirk, ovolo and bead; l, bolection moulding

by extension, the piece of material so moulded. The mouldings in Greek architecture have been elaborately classified as the ovolo, ogee, cyma recta, torus, scotia or trochilus, cavetto, astragal, and fillet or annulet. The cyma recta and cavetto were mainly used as purely decorative finishings; the ovolo and ogee as supports to other members of the composition; the torus and astragal for the tops and bottoms of columns; the scotia as a means of separating one part of a



Mouflon. Ewe and lamb of the Corsican species of wild sheep

base from the other; and the fillet for every kind of architectural profile.

Roman and Renaissance forms of moulding were based on the Greek, and certain classic mouldings were adopted by the Gothic architects, who used mouldings of every description lavishly. The medieval mason worked according to a system almost as rigid as the classical one, though the far greater variety drawn upon might point to a contrary conclusion. In Britain Norman architects rarely indulged in more elaborate mouldings than the plain cylindrical roll; but the introduction of the pointed arch and lancet windows opened the way for numbers of new forms. These were employed so systematically at different points that the dates of certain Gothic buildings can be told from the mouldings alone. Early English mouldings, which include the roll, fillet, and dog-tooth, are generally of finer workmanship than those of later date. Perpendicular work is flatter and harder. See Panelling.

Mould (*Hyphomycetaceae*). Division of fungi consisting of small, mostly gregarious and superficial plants, either saprophytes or parasites. They form velvety patches on decaying animal or vegetable substances. The plants consist of delicate threads, a single row of cells placed end to end (hyphae) and ending in conidia—minute spores or reproductive bodies, which are always free and not enclosed in

capsules. Many forms previously ranked as distinct species are now found to be merely developmental stages of higher fungi, notably of Ascomycetaceae. Most species have decided preferences for their food, one species affecting dead leaves, others over-ripe fruit, milk, cheese, other fungi, manure, and jams.

One of the best-known species, because it attacks almost any kind of dead organic matter, is *Penicillium glaucum*, the green mould. From a white creeping mycelium, which forms a delicate felt-work, fertile hyphae arise erectly, branch, and bear at their extremities a chain of green-tinged spores. These spores frequently act as yeast, breaking up saccharine solutions, and producing fermentation. Other moulds, of the order Zygomycetaceae, bear their spores in capsules.

Moulin Rouge, LE (Fr., the red mill). Parisian place of amusement. Situated in the Boulevard de Clichy, and built on the site of the old Bal de la Reine-Blanche, it was opened Oct. 5, 1889, and destroyed by fire Feb. 28, 1915. A spacious establishment, attached to which was a magnificent garden, its daily programme included a concert, followed by dance music by a first-class orchestra. The Moulin Rouge owed its name to the windmill which towered above the entrance, the sails of which were illuminated by red lights. Its rebuilding was announced in 1921.

Moulins. City of France. The capital of the dept. of Allier, it stands on the river Allier, 36 m. by rly. S.S.E. of Nevers, and is a rly. junction. Cutlery, textiles, hats, and glass are the chief manufactures. The Gothic cathedral of Notre Dame has two fine towers. Its choir was originally the chapel of the castle, and the chief of its many treasures is a beautiful triptych. The church of the Sacré Coeur is modern. Other buildings include the town hall, palais de justice and a 15th century belfry. There are remains of a castle, once the residence of the Bourbon family. Therein is a museum containing the famous Bible, dating from 1115, brought from the priory of Souvigny. From 1368-1527 Moulins was the capital of the Bourbonnaise. Pop. 22,000.

Moulmein or **MAULMAIN.** Seaport of Burma, in the Amherst dist. It is situated near the mouth of the Salween, sheltered by Bhilu Island from the Gulf of Martaban, but is rainy during the monsoon. In 1824 it was a fishing village, but is now the second port of Burma, with a great export of teak floated in rafts down the Salween, and of

rice. It has connexion by rly. with Pegu and Rangoon. Pop. 57,000.

Moulting. Name given to the periodical shedding of the outer covering of animals. It is best



Moulmein, Burma. New and old pagodas, the former in foreground

known in the birds, which usually shed and renew their feathers after the nesting season. This is apparently a time of ill-health and of strain on the constitution, and birds are usually silent and inactive during it. Moulting is also seen in the periodic shedding of the carapace in growing crustaceans, in the sloughing of the skins of snakes, and in the shedding of the skins of myriapoda, spiders, and insects, the process being known as ecdysis. Many mammals also shed their hair in the spring and grow a thicker coat again at the approach of winter. See Animal; Mammal.

Moulton, JOHN FLETCHER MOULTON, 1st BARON (1844-1921). British lawyer and scientist. Born at Madeley, Nov. 18, 1844, the son of the Rev. J. E. Moulton, a Wesleyan minister, he was educated at Kingswood School, Bath, and St. John's

College, Cambridge, becoming senior wrangler in 1868, and fellow of Christ's College. Called to the bar at the Middle Temple in 1874, Moulton soon became known as an authority on patent law, and was made a Q.C. in 1885. He was Liberal M.P. for Clapham in 1885-86, but did not again secure a seat until 1894, when returned for South Hackney. From 1898-1906 he was M.P. for the Launceston division of Cornwall, retiring on being made a judge of the court of appeal. In 1912 he was given a life peerage, and made a lord of appeal.

Lord Moulton during the Great War devoted his technical knowledge to the production of explosives, being chairman of the committee on high explosives, and afterwards director-general of explosive supplies for the ministry of munitions. In 1919 he became chairman of the British Dyestuffs Corporation. He died March 9, 1921. He contributed an article on Science and the Future to this Encyclopedia. See New Horizons.

Moulton, ELLEN LOUISE CHANDLER (1835-1908). American poet. She was born at Pomfret, Connecticut, April 10, 1835, and educated at Troy, New York. She took to literary work while quite young, editing *The Waverley Garland* in 1853, and writing *This, That, and the Other* in 1854. In 1855 she married William Moulton, a Boston publisher. Her more notable poems include *Swallow-Flights*, 1878, and *In the Garden of Dreams*, 1889. She died Aug. 10, 1908.



Ellen Moulton, American poet

Moulton, JAMES HOFFE (1863-1917). British theologian. Born Oct. 11, 1863, he was the son of Rev. W. F. Moulton and a nephew of Lord Moulton. Educated at the Leys

School and King's College, Cambridge, he entered the Wesleyan ministry in 1886, and was classical lecturer at Girton and Newnham Colleges, 1887-1901. In 1902 he was appointed Greenwood professor of Hellenistic Greek and Indo-European philology, Manchester University. He died in April, 1917.



Moulins, France. Place d'Allier, looking toward the church of the Sacré Coeur

Moulton, RICHARD GREEN (1849-1924). Anglo-American man of letters. Born at Preston, Lancashire, May 5, 1849, brother of Lord Moulton, he was educated at Christ's College, Cambridge, and London University. He was a university extension lecturer, 1874-90, and in 1891 he settled in the U.S.A., where for a time he followed the same career. In 1892 he was made professor of English literature at Chicago, and in 1901 head of the department of general literature. A scholarly interpreter of Shakespeare, Moulton wrote, among other works, *Shakespeare as a Dramatic Artist*, 1885, 3rd ed. 1897; *Shakespeare as a Dramatic Thinker*, 1907; *The Literary Study of the Bible*, 1899; *The Modern Study of Literature*, 1915. He was also responsible for *The Modern Reader's Bible*, a rearrangement of the Bible according to modern ideas. He died Aug. 15, 1924.

Mound. Hillock of earth or stones, especially when heaped up artificially. In the Mississippi basin and the American Gulf states are numerous pre-

Columbian structures by aboriginal agricultural peoples, hence called mound-builders. The mounds are conical, pyramidal, animal-shaped, or mural. Their use was sepulchral, for ritual, domiciliary, or defensive. The conical grave-mounds, 6 ft. to 300 ft. across, and up to 100 ft. high, resemble the European barrow and tumulus. The largest, at Grave Creek, Moundsville, W. Virginia, 320 ft. across, 70 ft. high, has two stone-capped timber chambers; one with two skeletons, the other—30 ft. above it—with one. The contents of the graves included shell beads and copper bracelets. The flat-topped pyramidal mounds, usually four-sided, may have a terrace or stairway.

Cahokia mound, Illinois—the largest U.S. earthwork—is 1,080 ft. by 710 ft., 99 ft. high, and sur-

rounded by about 70 lesser mounds. Etowah mound, Georgia,

is 380 ft. by 300 ft., 61 ft. high. The effigy mounds, mostly in Wisconsin, represent panthers, turtles, birds, and other forms, often associated with

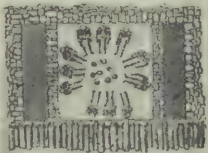
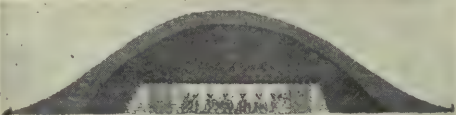
mural earthworks up to 900 ft. long. The so-called Elephant mound bore a much-discussed effigy 140 ft. long. In Ohio the Serpent mound bore a sinuous embankment 4 ft. high, 1,330 ft. long; the so-called Alligator mound may represent a lizard. In Georgia two represent birds. The strongholds, comparable with British earthworks, notably in Ohio, exhibit remarkable precision in their geometrical forms. The trees on some mounds, when first observed by Europeans, date them at least two centuries before the discovery of America; some are undoubtedly older. The cultural remains point to immigrant influences from the W. which farther S. developed the Mexican teocalli and the worship of serpent and sun. See Celt; Tumulus.

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Mound Bird. Popular name for the Megapodes, a family of game birds that deposit their eggs in mounds of decaying vegetable matter, where they are hatched by the combined heat of the sun and of the decomposition of their surroundings. There are about 15 species, found mainly in Australasia and the Pacific islands, of which the Brush turkey is a well-known example.

Moundsville. City of West Virginia, U.S.A., the co. seat of Marshall co. On the Ohio river, 11 m. S. of Wheeling, it is served by the Baltimore and Ohio rly., and river steamers. In the locality is a remarkable mound-builders' structure, from which the city is named. Pop. 10,700. See Mound.

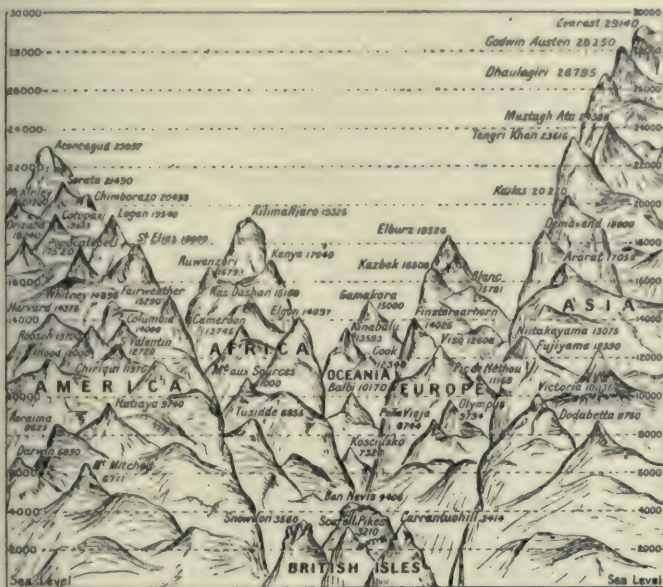
Mounet-Sully, JEAN (1841-1916). French actor. Born at Bergerac, Feb. 27, 1841, he studied at the Paris conservatoire, and made his first appearance as King Lear at The Odéon in 1868. Having served during the Franco-Prussian War, he reappeared in 1872 as Oreste in Racine's *Andromaque*, at the Comédie Française, where he remained the principal actor. He was regarded as one of the greatest tragedians of the 19th century. He died in Paris, March 1, 1916. His younger brother, Paul Mounet (d. 1922), was also an actor.



Mound constructed by tribes of N. America. 1. Section and plan of mound at E. Dubuque, Illinois. Vault measured 13 ft. \times 7 ft., and contained 11 skeletons. 2. Avondale mounds, Washington co., Mississippi, a typical series of mound tombs. 3. Burial of a chieftain, illustrated by De Bry (c. 1620). Tribesmen mourn around the mound, about the base of which arrows are stuck in the ground. On the mound is the chief's shell cup



Jean Mounet-Sully
French actor



Mountain. Diagram illustrating relative heights of the world's chief mountains.

Mount Abu. Culminating point of the Aravalli Hills, India. It is in Rajputana, 68 m. W. of Udaipur. The sanatorium, known by the same name as the mountain on which it stands, is 3,945 ft. in elevation. There are two fine temples built by the Jains. Of white marble, they date from the 12th and 13th centuries, and are held to be the finest extant specimens of Indian architecture. The altitude of Mt. Abu is 5,650 ft.

Mountain. Term used somewhat loosely to describe an elevated portion of the earth's crust. Altitude alone does not justify the application of the term to high ground, for an isolated elevation of less than 1,000 ft. frequently receives the designation, although it is usual to describe a ridge of this moderate elevation by the term hills, while high ground between 1,000 and 5,000 ft. is called hills in one place and mountains in another.

The term mountain does not necessarily signify steep slopes in two directions, for the scarped edge of the central plateau of France is known as the Cévennes Mts. The term is generally used to express the dominant aspect of the high ground over the immediate locality.

The earth's crust is for ever un-

dergoing changes by warping, fracture, and weathering, and this complex of activities, slow in process but cumulative in effect, produces the variations in elevation to which mountains are due. In the simplest cases mountains are due to actual building, for volcanic cones, as Fuji, Egmont, and Vesuvius, are the product of volcanic outbursts. Laccolithic eruptions produce such domes as the Henry Mts. of Utah without superficial outflowing of lava. These are the mountains of accumulation.

During geological times the earth has decreased in volume, and its crust has adjusted itself to the changing conditions and has thus produced crinkles, the result of the tangential warping strains produced continuously during the adjustment. The most recent crinkles are the great mountain ranges of the world as we now know them; here the strata of the crust are contorted, simply as great up and down folds, or complexly with folds, fractures, and the overthrust of one mass of rock over another.

The agencies of weathering steadily strive to reduce the earth's surface to a dead level, with the consequence that many mountain forms, such as the Cumbrian group in the Lake District of England, are merely the worn-down stumps of much mightier peaks.

The greater number of the fold mountains of the world are geologically young mountains belonging to the Tertiary Age; the great E.-W. line, Himalayas, Caucasus, Alps, Atlas, the two N.-S. lines

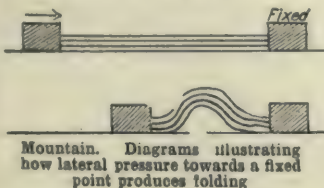
bordering the Pacific Ocean, the Rockies, Andes on its E. margin, and the Japanese, E. Indian, and New Zealand Mts. on its W., all belong to this period. The mountains of Africa, Drakensberg, Abyssinian Highlands, etc., make a third N.-S. line, but this belongs to an earlier period, to the ancient continent of Gondwanaland.

In general, the climate and natural vegetation of a mountain side follow the same sequence as would be observed in travelling over the surface polewards from the mountain foot. Yet this analogy only applies approximately. In the case of climate, although the temperature falls regularly as the mountain is ascended, yet the seasonal range of temperature hardly changes with elevation, while the diurnal range of temperature at high altitudes differs considerably from that at high latitudes.

In their control of human activities mountains have had different effects in relation to the rapidity with which man habitually travels. Under modern conditions the Alps, Rockies, Andes, and Himalayas are a barrier to human movement; in historic times the Alleghenies controlled the routes by which the pioneers opened up the fertile centre of N. America; but in earlier times the Carpathians and the Alps in Central Europe, like the Downs of S. England, provided routes along their pastoral levels which were followed by early man, who was averse from crossing the heavily forested lowlands.

In the more settled areas of the world mountainous districts are frequently the homes of backward peoples; some of these have settled in mountainous valleys in isolation; others, like the Montenegrins, have taken to the mountains as a refuge from the oppressor; others again, like the Transylvanian Rumanians and the Slovaks, have been driven to the heights by their foes. While the Andorrans are isolated in their Pyrenean fastness, the Basques and the Swiss have gained by their location. Mountains frequently serve as political boundaries, the Andes, Caucasus, Himalayas all serve this purpose; but they only make good frontiers when they lie in sparsely peopled regions. *See* Alps; Earth; Geology; Glacier; Himalayas; Rocks. **B. C. Wallis**

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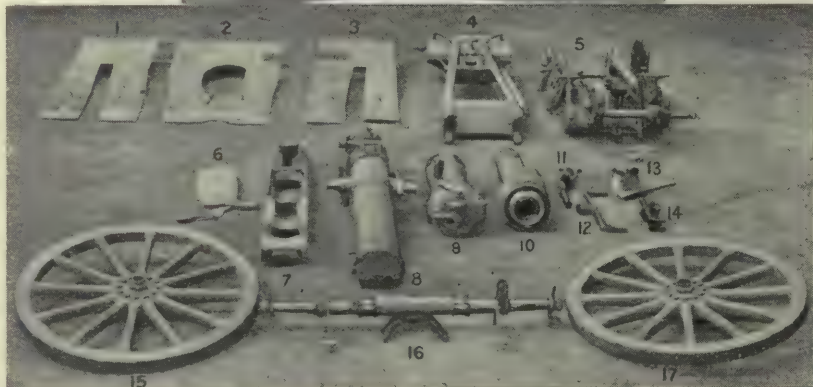


Mountain, THE (Fr. La Montagne). Name given to one of the political parties that arose in France during the Revolution. They first appeared, an offshoot of the Jacobins, in the national convention, 1792, the name being due to the fact that, about 100 strong, they sat on benches raised above those occupied by other groups. The Mountain included among its members Marat, Danton, and Robespierre, and under their leadership dominated the Jacobin Club.



by the G.W. and Taff Vale Rlys. The urban district includes a number of mining villages, among them Mountain Ash itself, Abercynon, and Cwmpennar, that became populous with the opening of the coal mines in the 19th century. The chief industry is the mining of coal. The principal

buildings, all modern, include the town hall, hospital and library, and the churches of S. Margaret and S. Winifred. The Welsh name for Mountain Ash is Aberpennar. Market day, Sat. Pop. 42,300

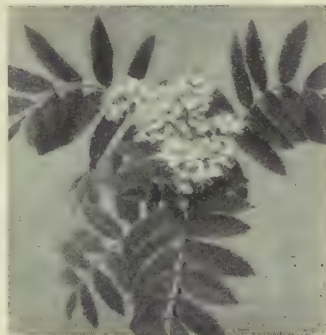


Mountain Battery. Portable gun of 75 mm. calibre. Top, limbered up. Centre, ready for action. Bottom, parts of the gun when taken down for transport. 1, 2, and 3. Component parts of the shield. 4. Hinged trail. 5. Carriage with elevating and traversing gears. 6. Firing shield. 7. Top of cradle. 8. Buffer, recuperator and cradle with trunnions. 9. Breech mechanism and chamber of gun, screwing into 10. Barrel and muzzle. 11, 13, and 14. Sights and sighting gear. 12. Elevating handle. 15 and 17. Wheels, fitting to 16. axle

By courtesy of Vickers, Ltd.

Their chief opponents in the convention were the Girondins, republicans too, but with more theoretical and less savage views, who were overthrown by the Mountain in 1793. The latter were responsible for the Reign of Terror. See French Revolution; Girondins.

Mountain Ash OR ROWAN TREE (*Pyrus aucuparia*). Small tree of the natural order Rosaceae. It is a



Mountain Ash. Flower and leaves of tree of natural order Rosaceae

native of Europe, including Britain, and Canaries, N. and W. Asia, and N. America. Its leaves are divided into six to eight pairs of slender leaflets. The small creamy-white flowers are produced in numerous clusters, and are succeeded by bright scarlet fruits.

Mountain Ash. Urban dist. of Glamorganshire, Wales. It is 4 m. from Aberdare, and 18 m. from Cardiff, and stands on the Cynon, a tributary of the Taff. It is served

makes about five mule loads, as a mountain battery has neither limbers nor wagons. The gun is jointed, so that the breech ring can be carried separately. The 75 mm. Vickers mountain gun illustrated herewith can be unpacked from mule-back and assembled in 3½ minutes. It weighs 1,408 lb. and divides into 6 loads, the heaviest of which is 230 lb. The gun fires a shell of 14.33 lb. with a rapidity of 20 rounds a minute.

MOUNTAINEERING AS A SPORT

C. E. Benson, Author of British Mountaineering

The reader may be referred from this article to those on the mountain ranges of the world, e.g. Alps; Andes; Rocky Mts. See also *Alpenstock*; *Alpini*; *Ice Axe*; *Rock Climbing*; and biographies of *Whymper* and others

Mountaineering is the sport of climbing mountains. Art or science may be combined with it, but the man who climbs a mountain for artistic or scientific purposes is not necessarily a mountaineer, though he may become one by the compulsion of his pursuit. Sport is its essence, and for this reason the

first ascent of Mt. Aiguille near Grenoble, in 1492, is inadmissible, as it was by order of Charles VIII of France.

Early mountaineering expeditions were for the most part sporadic outbursts of individual enterprise, of which perhaps the most notable is a considerable ascent in

the Monte Rosa region, because connected with the great name of Leonardo da Vinci. Wholly different in character were the ascents by Count Gesner of Zürich in the middle of the 16th century. It would seem that at about that period a Swiss Alpine Club, with sound mountaineering ideas, was being formed among the students of Zürich. We learn from Josias Simler that the use of the rope was appreciated, and that the value of darkened glasses on dazzling snow-fields and of certain precautions against frost-bite was understood.

This promising beginning was cut short by war, and there followed a hiatus of nearly 200 years, with the bright interval of Scheuchzer's expeditions, 1702-11. In 1739 came the first ascent of a snow mountain, the Titlis, by a monk whose name is unknown, and, two years later, the epoch-making expedition of Windham and Pococke to the Montanvert. Shortly after, definite attacks were made on the high peaks. The Buet was climbed by the brothers de Luc in 1770, and about 1783 Mt. Blanc was attempted, though without success, by the artist Bourrit. Three years later (1786) the monarch of mountains yielded to Jacques Balmat and Michel Paccard, and again in 1787 to Balmat and De Saussure. War then again intervened, yet the Jungfrau was climbed in 1811 and the Finsteraarhorn in 1812.

During the first fifty years of the 19th century several notable peaks had been conquered, and the ascent of Mt. Blanc became finally popularised, it might almost be said vulgarised, by Albert Smith's ascent in 1851 and its advertisement. Then, with the climbing of the Wetterhorn by Alfred Wills in 1854, came the birth of modern mountaineering, mountain climbing for the love of the sport. The year 1856 witnessed a notable departure, a guideless ascent of Mt. Blanc by Hudson and Kennedy's party.

In the winter of 1857-58 the foundation of modern mountaineering was laid by the establishment of the Alpine Club. With its formation came an organized assault on the Alpine giants, and they were conquered in quick succession by the skill and resolution of the pioneers.

From about 1870 mountaineering enterprise, aided by the spread of civilization and the increased facility of travel, has extended to the most remote of the world's high lands. Some of the most notable of these exploits have been: in Europe, the opening of a new playground in Norway, and several



Mountaineering on the most difficult crag in England, Pillar Rock, near Ennerdale, Cumberland. Left, beginning New North-east climb; right, rounding the notch

G. P. Abraham, Keswick

ascents in the Caucasus; in Asia, the exploration of the Karakoram range, and other Himalayan expeditions, and visits to the distant Altai; in America there have been numerous ascents in the Rockies from end to end, and also in the northern and southern Andes; in Africa, Kenya, Kilima-Njaro, and Ruwenzori have been conquered, and excellent work has been accomplished in New Zealand and Japan. It is curious to note that it was not until 1873 that Sgurr Alasdair, the highest peak in Skye, was scaled by Sheriff Nicholson. The loftiest of the Andes, Aconcagua, 23,080 ft., was climbed by Stuart Vines, and even greater altitudes have been attained in the Himalayas. It may be accepted that the highest ascents are Bride Peak, 24,400 ft., by the duke of the Abruzzi, with 23,975 ft. on Kabru, by W. W. Graham, and heights of 23,000 ft. and upwards by Rubenson and Monrad Aas, Longstaff, Hunter Workman, and Sir Martin Conway. Both among the Alps and further afield the names of British pioneers enormously preponderate.

Until quite recently access to Tibet, on the borders of which Mt. Everest, reputedly the highest mountain in the world, is situated, was forbidden to foreigners. Early in 1921 it was announced that the Dalai Lama had granted permission for a party to enter Tibet. The

English Alpine Club and the Royal Geographical Society promptly organized a powerful and well-equipped joint expedition to attempt to scale the peak. The party set out on May 18, 1921, with the intention of spending the first season in reconnaissance work, and in other preparations for the main effort, in 1922, by the climbers, who, led by Harold Raeburn, represent the English Alpine Club. Valuable scientific results were anticipated, and it was anticipated that the question raised on Graham's expedition, 1883, as to whether there are or are not loftier peaks than Everest would be decided.

The first essentials of mountaineering are nerve and condition. There is no greater mountaineering danger than a member of a party who loses his nerve, or is out of condition. Excellent guides are few—born mountaineers with great natural talent, men who would be internationals in other branches of sport. They are very difficult to secure, being booked long in advance, for the most part by the men who least require their assistance. The good are tolerably frequent, and are qualified to take charge on any reasonable expedition. The bad are numerous, forthcoming locally to meet the increasing demand, but without sound qualifications, and for the

most part unfit to take charge of any serious expedition.

As regards outfit, a map and compass, and ability to use them are necessary, also a rope 60–80 ft. in length, and the very best obtainable. The Alpine Club rope has stood the test of years, and is thoroughly reliable. Proper climbing boots, made and nailed by an approved firm, and the very best ice-axe obtainable, the shaft being straight-grained ash, should be taken. In the selection of these last two items the advice of an expert should be solicited. There is, or was, a lot of poor stuff on the market, and poor stuff is dangerous stuff. Other necessary articles are puttees, Balaclava cap, goggles, flask, field-glasses, and camping outfit, according to the nature of the expedition. As a stand-by on the march, raisins are unsurpassable. A cup, knife, lantern, slippers, and sundry medical appliances, e.g. lint, boracic powder, sticking plaster, etc., should be carried. Crampons find much favour amongst those who like them, and very little amongst those who do not. For magnesian limestone rocks, such as those found in Tirol, scar-



Mountain laurel in full foliage

petti, or rope-soled shoes, are generally to be preferred to nailed boots.

Mountain climbing may be divided into two branches—snow-work and rock-work. Snow-craft is to be acquired only by long experience and constant practice. Nominally the most familiar item of snow-craft, and one which may be practised in the home-land, is step-cutting. Step-cutting is hard and highly skilled manual labour. Great dexterity is demanded. For instance, on a steep ice-slope the completeness or incompleteness of a step may make just the difference between security

and disaster. In such positions progress at the rate of 100 ft. an hour is not exaggeratedly slow. A good guide has been known to take 70 strokes to fashion a step. In addition snow-craft implies ability to judge the condition of the snow in the immediate neighbourhood of the party and at a distance, and also to estimate its probable condition at a later hour, to determine the possibility of the existence of cornices—projecting eaves of snow, which are veritable death-traps for the unwary. To recognize the likelihood of avalanches, the lie of crevasses on glaciers, the stability or instability of a snow bridge, and to obviate the perils thereon attendant, and to decide whether the passage of an icefall is safe or unsafe, are some of the demands of snow-craft.

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Mountain Laurel (*Umbellularia californica*). Californian Sassafras, or spice bush. A tall evergreen tree of the natural order Laurinaceae, and a native of California, its alternate, lance-shaped leaves emit a strong odour like camphor. The greenish-yellow flowers are clustered in umbels. The name mountain laurel is sometimes applied to *Kalmia latifolia*. See American Laurel.

Mountain Meadows Massacre. Outrage committed by the Mormons, on Sept. 11, 1857. A party of 130 immigrants from Arkansas, with 40 wagons and over 200 horses and cattle, were passing through Utah territory to California, when they were attacked by Indians and Mormons in Indian disguise. In response to an urgent message for help, John Doyle Lee, a prominent Mormon bishop, with a number of followers, hastened to the spot. The immigrants, who had barricaded themselves behind their wagons, welcomed Lee as their saviour; but no sooner had the Mormons gained their confidence than at a signal from Lee a general

massacre took place, only 17 infants, too young to inform, being spared. Although the Mormon church denied responsibility, evidence given at Lee's trial implicated the highest officials. Twenty years after the crime Lee was brought to justice, and was executed at the scene of the massacre, March 23, 1877.

Mountain Railway. Type of rly. used for gradients exceeding 1 in 33. Such rlys. generally have



Mountain railway up Mount Pilatus, Switzerland; a rack railway with average gradient of 1 in 8. Engine and carriage form a single car with 32 seats

narrow gauges and special locomotives and tracks, e.g. rack rlys. See Railways.

Mountain Sickness. Group of symptoms which sometimes appear in persons on ascending into high latitudes. Lassitude, weakness in the legs, and increase in the rate of respiration are common effects. Headache, palpitation, nausea, occasionally vomiting and drowsiness may also occur. The condition is due to want of oxygen, owing to diminished atmospheric pressure. Persons who go to reside at high altitudes may develop these symptoms, but usually become acclimatized after a short period. A similar sickness occurs in flying, passengers making too rapid an ascent or descent in an aeroplane being liable to the symptoms.

Mount Allison. University of New Brunswick, Canada. Founded in 1843 by C. F. Allison, it was at first a Wesleyan academy. In 1858 it obtained the right to confer degrees, and in 1913 took its present name. It is still controlled by the Methodist Church of Canada, but is unsectarian. The buildings are at Sackville, N.E.,

and the activities include engineering workshops for the school of applied science.

Mount Auburn. Cemetery in Cambridge, Massachusetts, U.S.A. It is 6 m. W. of Boston, on the Boston and Maine Rly. Here are the graves of Longfellow, Lowell, Motley, Charles Sumner, Phillips Brooks, Oliver Wendell Holmes, and other famous Americans.

Mount Barker. Town in S. Australia. It is a rly. junction, 22 m. E. of Adelaide, on a plateau of Mount Lofty Ranges, in a rich agricultural and vine-growing district. Pop. 2,100.

Mountbatten. Name taken in 1917 by the English members of the family of Battenberg, i.e. the descendants of Prince and Princess Henry of Battenberg and of Prince Louis of Battenberg, created marquess of Milford Haven. See Battenberg.

Mount Bischoff. Tin mine in Tasmania. It is situated in the N.W., 90 m. W. of Launceston. Discovered in 1871, it is the richest in the world, with from 70 p.c. to 80 p.c. pure ore. The township Waratah, 1 m. from the mine, has a pop. of 2,300.

Mount Carmel. Bor. of Pennsylvania, U.S.A., in Northumberland co. It is 48 m. N. by E. of Harrisburg, and is served by the Philadelphia and Reading and other rlys. An extensive trade is carried on in anthracite coal mined in the neighbourhood. Organized as a town in 1848, Mount Carmel was incorporated in 1862. Pop. 17,500. The hill in Syria is known as Carmel (*q.v.*).

Mount Clemens. City of Michigan, U.S.A., the co. seat of Macomb co. On Clinton river, 20 m. N.N.E. of Detroit, it is served by the Grand Trunk Rly. A summer resort, it has noted mineral springs whose waters are efficacious in rheumatism, etc. It has carriage works, and manufactures beet sugar, agricultural implements, etc. Settled in 1802, Mount Clemens was incorporated in 1837 and became a city in 1879. Pop. 9,500.

Mount Desert. Island of Maine, U.S.A., forming part of Hancock co. Lying to the W. of Frenchman's Bay, its surface is hilly, the highest elevation being about 1,500 ft. Its beautiful lakes and rugged coast make it a favourite summer resort. Among the places chiefly frequented are Bar Harbour on the N.E. coast, Southwest Harbour and Northeast Harbour at the mouth of Somes Sound, and Seal Harbour. The island is joined to the mainland by a bridge, and there is also ferry communication. Pop. 8,500.

Mount Edgecumbe, EARL OF. British title borne since 1789 by the family of Edgecumbe. An old



4th Earl of Mount-Edgecumbe, British diplomatist
Heath

His son Richard, the 2nd baron, also an M.P. and lord-lieutenant of Cornwall, was succeeded by his brother George, an admiral, who obtained the earldom in 1789 and was the ancestor of the later earls. William Henry (1832-1917), who became the 4th earl in 1861, was lord chamberlain and lord steward to Queen Victoria, and was succeeded by his son, Piers Alexander Hamilton (b. 1865). The family seat is Mount Edgecumbe, near Plymouth, and the earl's eldest son is called Viscount Valletort.

Mounted Infantry. Foot soldiers mounted on horses. They differ from cavalry in carrying a rifle as weapon and in the slower speed of their mounts. The dragoons, as at first established in the 17th century, were mounted infantry. Napoleon unsuccessfully endeavoured to organize a similar body, and in both Russia and Prussia something of the kind was attempted. Some units usually referred to as cavalry were in reality mounted infantry, as those used in the American Civil War, 1862-64, and the Boers in the S. African War, 1899-1902, gave proof of the value of mobile infantry. The British had battalions of mounted infantry in the same war.

Previous to the Great War the British had a scheme for the raising and training of definite units of mounted infantry, and a mounted infantry school was established at Longmoor. Trench warfare furnished little opportunity for their use in France. In Palestine and elsewhere, under different conditions, the Australian mounted divisions and others answered the description.

Mount Gambier. Town in S. Australia. It is situated near the Victorian border, 305 m. by rly. S.E. of Adelaide. Its volcanic soil makes it a rich grain producer. Pop. 7,900. Mt. Gambier is an extinct volcano of which much of the original crater cone has collapsed, leaving its S. portion as the present summit. Valley, Blue, Crater, and Leg of Mutton lakes have formed

with the hollows; Blue Lake, about 250 ft. deep, is at the foot of vertical cliffs 250 ft. high. See Crater Lake.

Mountgarret, VISCOUNT. Irish title borne since 1550 by the family of Butler. Richard Butler, 2nd



14th Viscount Mountgarret, Irish peer
Maull & Fox

son of the 8th earl of Ormonde, was created viscount in 1550. Richard, the 3rd viscount, lost all by rebelling against Elizabeth, but his estates were restored to his son Edmund, the 4th viscount. Richard, 5th viscount, was outlawed for rebellion, but pardoned in 1715. In 1793, Edmund, 12th viscount, was made earl of Kilkenny, but this title died with him in 1846. His nephew, Henry Edmund, then became 13th viscount. The latter's son, Henry Edmund, 14th viscount, was in 1911 made a baron of the United Kingdom. In 1918 Piers Henry (b. 1903) became 16th viscount. The family residences are Ballyconra, Kilkenny, and Nidd Hall, Knaresborough, which, with some Yorkshire estates, came into the family through the marriage of the 13th viscount.

Mount Grace. Ecclesiastical ruin about 3½ m. from Northallerton, Yorkshire. It is the remains of a Carthusian priory, regarded as the most perfect of its kind in England. It was founded in 1397 and dissolved under Henry VIII. The existing buildings consist of the church and chapter house, and some separate houses or cells.

Mountjoy, CHARLES BLOUNT, 8TH BARON (1563-1606). English administrator. Son of James, 6th



Baron Mountjoy, English administrator

Baron Mountjoy, he was educated at Oxford University, entered the Inner Temple, and about 1583 began to attract the favour of Queen Elizabeth. He sat as member for Beeralston, Devonshire, from 1586, and took part in the campaigns in the Netherlands and Brittany, 1586-93. Made K.G. in 1597, he succeeded the earl of Essex as lord-deputy in Ireland, in 1599. He suppressed the insurrection of O'Neill, earl of Tyrone, notably by his victory at Kinsale, Dec. 24, 1601, and after Elizabeth's death received the submission of

Tyrone to James I. In April, 1603, he put down risings in Cork and the S.E. counties, leaving Ireland in the same year. He received the earldom of Devonshire and other rewards, and undertook diplomatic negotiations with Spain, 1604. The circumstances of his marriage, in 1605, with Lady Penelope Rich, who had long been his mistress, caused considerable scandal. Mountjoy died in London, April 3, 1606.

Mount Lofty. Ranges in South Australia, at the foot of which lies Adelaide. The highest point has an alt. of 2,334 ft.

Mount Lyell. Mine in Tasmania. It is situated near the middle of the W. coast, and was discovered in 1883. Worked first for gold, it has since developed into one of the richest of copper mines, yielding half the mineral output of Tasmania. It has been worked by electric power derived from Lake Margaret since 1914. Gormanston, the township near it, has a pop. of 800. *See* Copper.

Mount Mellray. Trappist monastery in co. Waterford, Ireland. It lies on rising ground, 650 ft. above sea level, about 4 m. N. of Cappoquin, and was founded in 1830, the once wild and bleak mt. slopes having been converted into luxuriant woodland, fertile pastures, and vegetable gardens. The plain quadrangular buildings include a chapel with lofty spire, a guest house, and schools. *See* Trappists.

Mountmellick. Market town of Queen's co., Ireland. It stands on a small stream called the Owenass, with a station on the G. S. & W. Rly., 6 m. from Maryborough, and 50 from Dublin. It is also served by the Grand Canal. It has a trade in agricultural produce and a few manufactures. The Society of Friends established a school here in 1796. Market days, Mon. and Sat. Pop. 2,300.

Mount Morgan. Town in Queensland. It is 24 m. by rly. S.W. of Rockhampton, and is practically maintained by the mine of this name, which has produced £20,000,000 from its gold and copper. Pop. 10,000. *See* Australia.

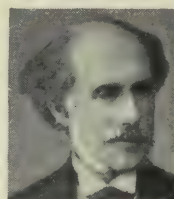
Mounts Bay. Inlet on the S. coast of Cornwall, England. It is an important pilchard fishing station, and contains St. Michael's Mount (*q.v.*). The bay measures 21 m. across, with Penzance on the W. shore.

Mountsorrel. Market town of Leicestershire. It stands on the Soar, 4 m. from Loughborough, and 7 from Leicester. The station is Sileby on the Mid. Rly. In the vicinity are extensive granite quarries. The chief buildings are two churches, one at North End and the other at South End. Pop. 2,800.

Mount Stephen. GEORGE STEPHEN, 1ST BARON (1829-1921). Canadian financier. Born June 5,

1829, son of William Stephen, of Dufftown, Banffshire, he emigrated to Canada in 1850, and became a cloth manufacturer at Montreal, ultimately controlling other business undertakings, and becoming president of the St. Paul, Minneapolis and Manitoba Rly., and of the Bank of Montreal. About 1880 he began his association with his cousin, Donald Smith, afterwards Lord Strathcona, and the two carried to completion the C.P.R. Stephen was the first president of the line, resigning his post in 1888. In 1886 he was made a baronet, and in 1891 a baron, taking his title from one of the peaks in the Rockies, named after him. He died Nov. 30, 1921.

Mount-Temple. WILLIAM FRANCIS COWPER-TEMPLE, 1ST BARON (1811-88). British politician. Born Dec.



1st Baron Mount-Temple, British politician

13, 1811, a younger son of the 5th earl Cowper, he was educated at Eton, and after a few years in the army entered the House of Commons as Liberal M.P. for Hertford in 1835. From 1846-55, he was in the Liberal and Coalition ministries; was vice-president of the council, 1857-59, and first commissioner of works, 1860-66. His mother married Lord Palmerston as her second husband, and he inherited Palmerston's Hampshire seat, Broadlands, and took the additional name of Temple. He was M.P. for S. Hampshire, 1868-80, when he was made a peer. Mount-Temple is chiefly remembered as the author of the Cowper-Temple Clause (*q.v.*). On his death, Oct. 16, 1888, his title became extinct. His estates passed to the Hon. Evelyn Ashley.



1st Baron Mount Stephen, Canadian financier Russell

Mount Vernon. City of Illinois, U.S.A., the co. seat of Jefferson co. It is 75 m. by rly. E.S.E. of St. Louis, and is served by the Louisville and Nashville and other rlys. Its manufactures include lumber and machine-shop products. Settled in 1819, it was incorporated in 1837, and became a city in 1872. Pop. 9,800.

Mount Vernon. City of Indiana, U.S.A., the co. seat of Posey co. On the Ohio river, 19 m. W.S.W. of Evansville, it is served by the Louisville and Nashville, and other rlys. The dist. produces large quantities of wheat. Settled in 1803, it was incorporated in 1846, and became a city in 1865. Pop. 5,300.

Mount Vernon. City of New York, U.S.A., in Westchester co. A residential and N. suburb of New York City, it stands on Bronx river, and is served by the New York, New Haven, and Hartford and other rlys. Machinery and clothing are manufactured. Dating from 1852, Mount Vernon was incorporated in 1853, and became a city in 1892. Pop. 42,700.

Mount Vernon. City of Ohio, U.S.A., the co. seat of Knox co. On the Kokosing river, 24 m. N.N.W. of Newark, it is served by the Baltimore and Ohio and the Pennsylvania rlys. It has engineering works, flour and sawmills, and furniture and glass factories. Natural gas and lumber are obtained locally. Organized in 1805, Mount Vernon was incorporated in 1845, and became a city in 1853. Pop. 9,200.

Mount Vernon. Village of Virginia, U.S.A., in Fairfax co. Standing on the Potomac river, 15 m. S. of Washington, it was the home of George Washington. The mansion in which he resided is a wooden two-storey building occupying an elevated position overlooking the river. A little distance away, on the edge of a wooded ravine, is the tomb containing the remains of Washington.



Mount Vernon, Virginia. House in which George Washington lived, now a national monument

Mourne. Mt. range of Ireland. In the S. of co. Down, it extends for 14 m. in a S.W. to N.E. direction. Slieve Donard, the culminating summit, attains 2,796 ft.

Mourning. Outward expression of sorrow, particularly for the dead. In the modern civilized world it takes the form of wearing black garments and using that colour in other ways, e.g. on writing-paper, or black horses at the funeral. White is also a mourning colour, while mauve is worn for half mourning.

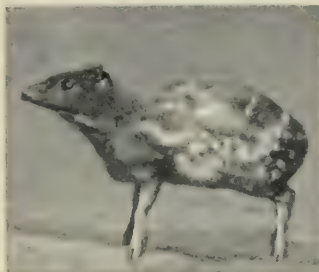
Mourning customs are usages and rites attending the public manifestation of sorrow for the dead. In primitive society some conventional signs of mourning denote a condition of taboo, or a desire to placate the ghost, or to avoid recognition, as in the case of dishevelment. The most widespread demonstration of grief affects the raiment, which may be white, as in imperial Rome, Japan, and W. Africa; red, Gold Coast; blue, Turkey and Ancient Egypt; grey, Abyssinia; yellow, China; or black, Europe. The coat may be reversed, as with the Ainu. The material may be hemp, as in China; haircloth, the sackcloth of Gen. 37; network, as in Australia; or grass mantles, or white shell-necklets, as in Melanesia.

The body may be smeared with clay, mud, ashes, or black paint. The hair may be allowed to grow, or shorn and burned; it may be buried with the dead, or hung upon trees. Laceration as practised anciently, in Arabia and Scythia, and forbidden by Moses (Lev. 29), still endures, and special scarifiers may be used, as in Polynesia. Finger-amputation survives from palaeolithic Europe. Omaha youths pierce the arms with willow twigs, and chant a dirge while a near relative extracts them. Women may be forbidden speech, and have to rely for one or two years upon gesture-language. Affection for and mystic union with the deceased may be manifested by wearing the skull, or other bones. Wailing tends to develop a class of professional mourners, as with the Pueblo Indians, Semites and Irish keeners.

In the English-speaking world and to some extent elsewhere, the tendency of the 20th century is to reduce very considerably the signs and time of mourning. The heavy crepe worn by widows in the Victorian era has almost disappeared, while the long periods, extending to two years, during which black garments were worn, have been reduced. The mourning ring has gone too, but bereaved families still use black-edged note-

paper. On the death of a royal personage a period of mourning for those attending court is prescribed, and instructions are issued about the clothes to be worn. See Africa; Burial Customs; Funeral Rites.

Mousa (Norse, moory isle) Uninhabited islet, about $1\frac{1}{2}$ m. long, off the S.E. coast of Mainland, Shetland. Upon a rocky promontory facing the sound, 13 m. S. of Lerwick, stands a broch, the most perfectly preserved of the so-called Pictish towers of Scotland, and now scheduled under the Ancient Monuments Protection Acts. The unroofed court, 30 ft. across, with well and hearthstone, is surrounded by two walls 15 ft. thick overall, containing three beehive-roofed chambers, above which six galleries lit by slits in the inner wall penetrate to the parapet, 45 ft. high. The outward bulge of the upper courses, giving to the tower the aspect of a dice-box, rendered this prehistoric stronghold un-



Mouse Deer. Specimen of the Indian chevrotain

W. S. Burridge, F.Z.S.

scalable. It was unsuccessfully besieged by Harold, earl of Orkney, in 1154. See Broch.

Mouscron (Flemish, Moescroen). Town of Belgium, in the prov. of W. Flanders. It lies close to the French frontier, 7 m. S.S.W. of Courtrai and 5 m. N.E. of Tourcoing, on the Ghent-Tourmai rly. line. It has spinning mills, soap works, tobacco manufactories, and miscellaneous industries. It was occupied by the Germans throughout the Great War. Pop. 21,000.

Mouse. Name popularly applied to many small rodents, but correctly only to the smaller

species of the genera *Mus* *Apodemus* and *Micromys*. Three species occur in Great Britain, the house mouse, the harvest mouse, and the long-tailed field mouse. The first (*Mus musculus*) is found almost wherever man exists. It is brown in colour, with large ears and long tail, measuring altogether from 4 to 5 ins. in length. The harvest mouse (*Micromys minutus*), discovered by Gilbert White, is confined in Britain to England and the S. and E. of Scotland. One of the smallest of British mammals and the only one with a prehensile tail, it is bright orange brown on the upper parts and white below. It constructs a globular nest among the stems of standing corn.

The long-tailed field mouse (*Apodemus sylvaticus*) swarms in the fields, and is one of the most prolific of mammals. In general form it closely resembles the house mouse, but has a longer tail. Some five distinct local varieties have been recorded for Great Britain. The shrew is not a mouse. In America the word mouse is also applied to a large number of voles. See Field Mouse; Shrew; Vole.

Mouse Deer. Popular name for the chevrotain (*q.v.*). This is a small ungulate mammal placed by zoologists between the deer and the camels.

Mousehold. Heath or open space, near Norwich. Within the city boundaries, it overlooks it on the N.E. Here in 1549 the insurgents, under Robert Ket, encamped. Crome has immortalised it in several of his paintings, while it figures in Borrow's writings. There are barracks here, but the heath itself is public property.

Mousquetaires. French regiment of guard cavalry, two companies strong, one formed in 1622 and the other in 1660. The regiment was disbanded in 1775.

Monsterial. The closing period of the lower palaeolithic age in Europe. After the Acheulean period the climate varied—the bison, musk-ox, steppe horse, reindeer, and Arctic fox are found—and systematic cave life began. The institution of ceremonial burial identifies the race, especially at Chapelle-aux-Saints in



Mouse. Left, harvest mice on ears of corn; right, house mouse, *Mus musculus*.

Corrèze and Le Moustier in Dordogne, whence the name. The flints include side-scrapers, points, lance-heads; sling-stones and rude bone tools are also found. Stations existed from Crayford in the Thames valley eastward to Asia Minor and the Nile valley.

Mouth. Cavity in the face of human beings and other animals. It contains the tongue and the teeth, and through it food passes into the body, and speech and other sounds proceed. The mouth is closed by the lips, and its roof is known as the palate. To it also belong the gums. By analogy the word is applied to the outlet of anything, e.g. the mouth of a river, or of a bottle. *See* Anatomy; Animal; Lip; Man; Teeth; Tongue.

Mouthpiece. Part of a wind instrument through which it is blown. The word is used especially for independent parts, such as the small tubes of the flageolet and flute-à-bec, and for the cup-shaped mouthpieces of brass instruments. *See* Embouchure.

Moville. Market town of co. Donegal, Ireland. It stands on the W. side of Lough Foyle, 19 m. from Londonderry. It is a port of call for vessels and is a pleasure resort. Market day, Thurs. Pop. 1,000. Another Moville is in co. Down, near Newtownards. Here are remains of the abbey founded by S. Finian.

Mowbray, BARON. English title dating from 1283. Notable of the early members of the Norman family of Mowbray were Roger, one of the barons who rose against Henry II, and William, who was among the barons who forced Magna Carta from John. A later Roger was summoned to Parliament as a baron in 1283, and his son John was hanged for rebelling against Edward II. John, the 4th baron, married a great heiress, and their younger son, Thomas, who became the 6th baron, was made earl of Nottingham and duke of Norfolk. In 1475, with the death of John, the 4th duke, the male line of the Mowbrays became extinct. The estates were divided between the families of Howard and Berkeley, and the barony fell into abeyance. In 1877 it was revived for Alfred Joseph, 20th Baron Stourton, and his son Charles became, in 1893, the 24th baron Mowbray. Bramber Castle, Sussex, was one of the seats of the Mowbrays. *See* Norfolk, Duke of.

Mowing. Operation of cutting a fodder crop, either by a mowing machine or by the scythe, the latter being also used at times for cereals. A good scytheman, swinging the implement from the body, and not employing arm

work only, can mow about two acres per day. The point of the scythe is put in at the required height, and swung evenly through so as to leave a level stubble.

A mowing machine is a two-wheeled machine used for cutting grass and seed crops. The work is done by sharp "fingers" attached to a finger beam, or cutting bar, which adjusts itself to the shape of the ground. *See* Scythe.

Moynihan, SIR BERKELEY GEORGE ANDREW (b. 1865). British surgeon. Born at Malta, Oct. 2, 1865, a son of Capt. Andrew Moynihan, V.C., he was educated at the Royal Naval School, and took his medical degrees at London University, studying medicine also



Sir B. G. A. Moynihan, British surgeon
Elliott & Fry

at Leeds and Berlin. He practised in Leeds, where he was appointed professor of clinical surgery in the university and honorary surgeon to the general infirmary. Knighted in 1912, he served throughout the Great War with the R.A.M.C., reaching the rank of major-general. He has written books on surgery.

Mozambique, or MOGAMBIQUE. City and seaport of Portuguese E. Africa. It stands on a small coral island of the same name, at the mouth of Mosuril Bay, 3 m. from the coast. It has a harbour, and the forts, built by the Portuguese soon after its foundation in 1508, still stand. There are a number of other 16th century buildings. At one time the capital of the province, its importance as a port declined during the 19th century chiefly owing to the growth of Lourenço Marques. Its full name is San Sebastian de Mozambique. Pop. 4,300.

Mozambique was originally the name of the island only. Discovered by Vasco da Gama in 1498, this then contained a considerable Arab settlement. The name became also that of the town founded

by the Portuguese, and was later extended to include the Portuguese possessions on the mainland. *See* East Africa, Portuguese.

Mozambique Channel. Strait of Africa. It is between the coast of Portuguese East Africa and the island of Madagascar, and was at one time a noted resort of pirates and slave-raiders.

Mozarabes. In Spain, term applied to those Christians who, under the Moorish domination, maintained their old life and religious practices amid the Moslems, as in Toledo. The liturgy preserved by these people is known as the Mozarabic, Gothic, or Isidorian, and the introduction of the Roman rite was frequently resisted by the Mozarabes, e.g. in Castile and Leon, 1077, and Toledo, 1085. Gradually the use was suppressed or died out, but the rite is still performed in the Mozarabic chapel in the cathedral of Toledo and at Salamanca. *See* Moors; Spain.

Mozart, WOLFGANG AMADEUS CHRYSOSTOM (1756-91). Austrian composer. Born at Salzburg, Jan. 27, 1756, he was the younger child of Leopold Mozart, director of music to the archbishop of Salzburg. At an exceptionally early age Mozart displayed musical powers of a remarkable character. At four he composed piano music, and at six his piano playing was so extraordinary that his father took him and his sister on a concert tour to Munich and Vienna. The following year they started upon another tour which extended over three years, during which they visited many cities in Germany, also Paris and London.

After his return to Salzburg in 1766 Mozart devoted himself largely to composition, his works including instrumental music, church music, and operas; he also made several short tours in Italy, where some of his operas were produced. For a time he was in the service of the archbishop of Salzburg, but the harsh treatment he received led to his quitting this in 1781 and settling in Vienna, where he married



Mozambique. Portuguese East Africa. Principal square, with the old Government house in centre and new hospital on right

Mozart's operas had already achieved considerable success, but the production of *Idomeneo* at Munich in 1781 definitely placed him in the front rank of opera composers, and marked the turning point in his career, leading the way to his greatest operas, *Le Nozze di Figaro*, 1786; *Don Giovanni*, 1787; and *Die Zauberflöte*, 1791. His last composition was the Requiem, which he began the year of his death, but left unfinished. He died in Vienna of a malignant fever, Dec. 6, 1791, and was buried the next day in a pauper's grave outside the city gates.

Mozart's life was a remarkable illustration of the conditions of the time, whereby a musician might be one of the most celebrated in Europe, the intimate of princes, and yet be in a constant state of anxiety about the ordinary necessities of life. Granted that his wife was a bad manager and he himself naturally improvident and careless about money matters, his precarious means of gaining a livelihood, by teaching, playing at concerts, and composing made him rarely free from pecuniary worries which undoubtedly hastened his end. His compositions number 624, and are distinguished by spontaneous and beautiful melodies. His operas form a landmark in the history of national opera in Germany, and his instrumental music shows an important advance in the development and treatment of the orchestra. *See Opera.*

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Mozdok. Town of S. Russia, in the prov. of Terek (general government of the Caucasus). It stands on the river Terek, 60 m. N. of Vladikavkaz. There are manufactures of candles, soap, leather, spirits, bricks, and tiles, and trade in silk, cotton, and woollen goods, etc. Vines and fruit trees are cultivated and silkworms extensively bred. Pop. 15,000.

Mozir. Town of W. Russia, in the govt., and 150 m. S.E., of Minsk. It stands on the Pripet and the Orel-Warsaw Rly. There are leather and oil factories and breweries, and considerable trade in cereals, cattle, horses, and timber. Pop. 11,000.

M.P. Abbreviation for Member of Parliament; Military police. "

Mpongwe or **Pongo.** Name applied by the Portuguese to the Abuka, a negroid tribe in the Gabon colony, French Equatorial Africa. Their Bantu dialect ex-

tends from the N. Gabon peninsula along the coast to the Ogowe. They are industrious cultivators, traders, and boatmen, using craft 60 ft. long, hollowed out by fire. *See Bantu*; *Negro.*

Mpororo. Upland region on the S.W. border of Uganda. Extending from the Kagera river-burboundary between Tanganyika territory and Ankole to Mt. Mfumbiro in Belgian Congo, it comprises scantily timbered grass-steppes 4,600 ft. above sea-level, with mountainous ridges up to 7,600 ft., and marshy valleys. It possesses a healthy, temperate climate, with big game in abundance, and fertile soil, and is ruled by the pastoral Batusi, who have subjugated the primitive agricultural negroid population. These Bapororo are



After J. Lange

allied to the Ruanda Bahutu, the Ankole Bairo, and the Wanyambo (q.v.). *See Africa.*

M.P.S. Abbreviation for Member of the Pharmaceutical Society (of Great Britain).

Mr., Abbrev. for Mister (q.v.)

M.R.C.S. Abbreviation for Member of the Royal College of Surgeons.

M.R.C.V.S. Abbreviation for Member of the Royal College of Veterinary Surgeons.

Mrs. Dane's Defence. Drama by Henry Arthur Jones. It was produced Oct. 9, 1900, at Wyndham's Theatre, London, where it had a run of 209 performances. The story tells how Sir Daniel Carteret, a famous judge, having undertaken, in a private capacity, the defence of Mrs. Dane from village gossip, discovers that her past prevents her from becoming the wife of a young friend of his. Charles Wyndham and Lena Ashwell played the leading parts.

Mrs. Dot. Comedy by William Somerset Maugham. It was produced April 27, 1908, at the Comedy Theatre, London. Marie Tempest played Mrs. Dot, and Grahame Brown, Kenneth Douglas, and Lydia Bilbrooke were members of the cast.

Mrs. Poyser. Character in George Eliot's novel *Adam Bede*, published in 1859. A shrewd and practical farmer's wife, her philosophy of life is packed with a homely wit and wisdom, which she delivers with an epigrammatic terseness that has supplied the currency with many familiar quotations. The author took delight in this creation of her imaginary world, "writing her dialogue with heightening gusto" as the book went on, and she records in her diary her satisfaction when told that Mrs. Poyser had been quoted in the House of Commons: "As the farmer's wife says in *Adam Bede*, it wants to be hatched over again and hatched different." *See Adam Bede.*

Mr. Wu. Drama by Harry M. Vernon and Harold Owen. It was produced Nov. 27, 1913, at The Strand, London, where it had a run of 403 performances. The plot is concerned with the attempt made by Mr. Wu, a wealthy Chinaman, to avenge the seduction of his daughter by seducing her betrayer's mother, Mrs. Gregory. In the parts of Mr. Wu and Mrs. Gregory Matheson Lang and Lilian Braithwaite scored great successes. It was revived in 1917 at the same theatre.

MS. Abbreviation for manuscript (q.v.); pl. MSS.; and as M.S., for Master of Surgery.

Msta. River of Central Russia. Rising in Lake Mstino in the govt. of Tver, it flows through that of Nijni-Novgorod and, after a winding course of about 150 m., discharges itself into Lake Ilmen, S.E. of Novgorod. It is much used for the transport of grain and timber, and is connected with the Volga by a system of canals.

Mtkhet. Town of Georgia. It is in the dist., and 10 m. N.W., of Tiflis, at the junction of the rivers Aragva and Kur. It was the old capital of Kartalia, and the residence of the Georgian kings. The ancient cathedral, the burial place of several Georgian princes, contains valuable books and MSS.

Muansa or **Mwanza.** Prov. of Tanganyika Territory, E. Africa. It is bounded N. by Lake Victoria and Kenya Colony, E. by the Aruscha prov., S. by Kondoa-Irangi and Tabora provs., and W. by Bukoba prov. It was conquered by the British in the Great War. Pop. est. 300,000.

Muansa OR MWANZA. Port of Tanganyika Territory, E. Africa. At the S. end of Lake Victoria, it is situated at the N.E. entrance of Muansa Gulf, 231 m. S. of Kisumu. Before the Great War there was a large export of hides and groundnuts, *via* Kisumu and the Uganda Rly. Muansa was captured, July 14, 1916, by a British force under General Crewe, who advanced from this direction upon Tabora. It is a wireless and telegraph station and the administrative centre of the prov. of Muansa. Pop. 3,000.

Much Ado About Nothing. Romantic comedy by Shakespeare. While the friends of Beatrice and Benedick plot successfully to bring about their marriage, Don John, bastard brother of the prince of Arragon, plots to make Claudio, the prince's favourite, think that Hero, his betrothed, is unfaithful, but is thwarted by the unwitting agency of the simple-minded constables Dogberry and Verges.

The play, in which tragedy, comedy, and farce are blended, was first printed in quarto in 1600. The scene is laid in Messina. Much of the plot is Shakespeare's, but he derived materials from Bandello's *Timbreo di Cardona*, 1554; the story of *Aridante* and *Genevra* in Ariosto's *Orlando Furioso*; and that of *Phaon* and *Claribel* in Spenser's *Faerie Queene*. To the modern mind the main interest in the play is in the characters of Benedick, a lord of Padua, pledged to bachelorhood, and Beatrice, a lady as apt at scornful speech as disdainful of men, but full of nobility of soul, displayed in her defence of her cousin Hero. Beatrice and Benedick afford perhaps the earliest examples of character development in Shakespeare's plays, the first being a favourite impersonation with Mrs. Abington, Mrs. Siddons, and Ellen Terry; the second a favourite with Charles Kemble, Macready, Charles Kean, and Henry Irving. A notable modern revival was that at The Lyceum, Oct. 11, 1882, when Irving played Benedick, Forbes-Robertson Claudio, Jessie Millward Hero, and Ellen Terry Beatrice.

Much Wenlock. Name for the parish in Shropshire which forms part of the borough of Wenlock.

Mucic Acid. White crystalline powder. It is first prepared by Scheele in 1780 by the action of nitric acid on milk sugar. Fourcroy and Vauquelin afterwards discovered that it could be made from various gums and mucilages, and they gave it its present name. Mucic acid is isomeric with saccharic acid.

Mucilage (Lat. *mucilago*, from *mucus*, slime). Aqueous solution of gum. Though applied generally to any solution of gummy matter in water, the word properly describes the sticky, viscous liquid rather than that which is clear and transparent. Tragacanth, exuded from the stem of *Astragalus gummifer*, imported from Smyrna, is the thickest kind, absorbing 50 times its own weight in water when melting, but it is a weak adhesive, and is used chiefly in thickening colours for calico printing; for making pills and ointment; and in the manufacture of filaments for electric bulbs.

Mucilage is a constituent of many trees and plants, and is obtained from the trunks and boughs of cherry, elm, and various acacias, *e.g.* *A. arabica*; from seeds, *e.g.* linseed; roots, *e.g.* marsh mallow; and stems. It is also obtained from glue, gelatin, and British dextrin. Starch mucilage is used for making enemas; casein from cheese or curdled milk forms a strong mucilage which is not affected by damp or water; dextrin gives a clear fluid; gelatin and glue mucilage must have glycerine or an acid mixed with it to keep it liquid. *See* Gum.

Mucin. Substance consisting of protein combined with a carbohydrate derivative. It occurs in epithelial cells and forms the chief constituent of the cementing substance between cells. It is found also in the saliva, gastric juice, bile, etc. *See* Mucus.

Muckers (Ger. *Mucker*, hypocrite). Fanatical sect of German mystics. It was founded about 1835 at Königsberg by two Lutheran pastors named Diestel and Ebel. The members, who were mostly connected with the German aristocracy, Frederick William IV being said to hold their views, professed to lead a life of "higher purity," with the result that grave charges of immorality were brought against them, and their leaders were degraded from the ministry and imprisoned, 1839-42.

Muckross Abbey (Irish, *Mucros*, peninsula of the pigs). Ruins of a monastery for conventual Franciscans founded by Donal MacCarthy More in 1440 in co. Kerry, Ireland. On the site of an earlier building, and known also as Irrelagh, the abbey was occupied until 1589. It was several times restored, but finally destroyed in 1652. The ruins, with the adjacent house and park, were purchased in 1899 by Lord Ardilaun. *See* Killarney.

Mucoid. Substance resembling mucin, forming a cementing substance in certain kinds of tissue.

Mucous Membrane. Membrane composed of epithelium on a basement layer. It contains mucous glands, and lines the cavities and canals of the body which communicate with the external surface, such as the alimentary canal and bladder.

Mucus. Word of Greek origin, meaning the secretions of the mucous membranes. It is applied especially to the secretions of the nose in human beings, but also to those of snails, slugs, and other molluscs.

Mud. In geology, name given to finely divided debris of rocks. Muds vary in colour according to their composition. Blue mud deposits are so coloured by ferrous sulphide, and are found in large areas over ocean bottoms near the coast, and sometimes extend for 200 m. from land. Blue mud deposits are particularly prominent along coast-lines in the Pacific, Atlantic, and Indian oceans. Red mud contains ferric oxide, and green mud glauconite. The latter occurs in formations known as greensand, and is found off the E. coasts of N. and S. America, Australia, etc. *See* Rock.

Mudar (*Calotropis gigantea*). Evergreen shrub of the natural order Asclepiadaceae, native of



Mudar. Leaves and flower cluster of the evergreen shrub

India. The large, opposite leaves are broad, wedge-shaped, and woolly on the under side. The handsome rose and purple flowers are clustered in umbels. A smaller species (*C. procera*), native of Persia, has white flowers, with a purple spot on each petal. Both plants yield an acrid, milky juice, used, as is the bark of the roots, as a remedy for skin diseases; and the inner bark of the younger branches provides a valuable fibre, which is applied to the same uses as that of hemp.

Mud-fish. Popular name applied to several species of fish constituting the families Ceratodon-



Mud-fish. Pictorial diagram showing the African species in its hole

tidae and Lepidosirenidae, and the sub-class Dipneusti or Dipnoi. The first family, consisting of the single Queensland species, *Neoceratodus forsteri*, is described in the article *Ceratodus* (q.v.). The Lepidosirens consist of three specimens of *Protopterus*, natives of mid-Africa, and the S. American *Lepidosiren paradoxa* of the Amazon and its affluents. *Protopterus annectans* is an eel-like fish, about 6 ft. long, with slender and feeble paired fins, useless for locomotion, which devolves chiefly upon the tail. It subsists upon frogs, crustaceans, worms, and insects in the shallow water of river marshes; has a lung in addition to gills, and has to rise to the surface repeatedly to replenish it with fresh air.

It aestivates through the hot season when the pools dry up, by boring into the mud to a depth of 1½ ft., then coiling on itself, and secreting from the skin a coating of mucus which hardens into a cocoon. A tubular opening connected with its mouth enables it to breathe, and in this way it waits for the rainy season to release it, living in the meantime on the fat stored around its kidneys. See Bowfin; Fish.

Mudford, WILLIAM HESELTINE (1839-1916). British journalist. Son of William Mudford, some time editor of *The Courier*, and afterwards proprietor of *The Kentish Observer* and



W. H. Mudford, British journalist.

The Canterbury Journal, he began journalistic life as a reporter. For a time he acted as local correspondent of *The Standard*, and joining the gallery staff of that paper in the early 'sixties, in 1873 became its business manager. By the will of the proprietor, James Johnstone, in 1878, he was left editor for life. Under his control, *The Standard* became one of the great forces in London journalism. He retired in 1900, and died as the result of an accident, Oct. 8, 1916. See *Standard*, *The*.

Mudgee. Town of New South Wales, Australia. It is 190 m. by rly. N.W. of Sydney, and was long the railroad of a branch of the Western Line, which is now extended to Dunedoo. Pop. 3,600.

Mud Guard. Guard of metal or wood placed over each wheel of a bicycle, motor cycle, or motor car to protect the rider or occupants from mud splashes. It is the equivalent of the splash-board of a horse-drawn vehicle. See *Bicycle*.

Mudie, CHARLES EDWARD (1818-90). Founder of Mudie's Library. The son of a newsagent, he was



C. E. Mudie, Library founder.

born in Chelsea, Oct. 18, 1818. In 1840 he started in business for himself as a bookseller in Southampton Row, Bloomsbury, and did also a little publishing, but a development came when he began to lend books on business lines. The idea caught on, and in 1852 he moved Mudie's select library, as he called it, into New Oxford Street. He died Oct. 28, 1890. The business, soon known in every part of the land, became a limited company in 1864. Outside his business Mudie, who was a Congregationalist, is known as the author of several hymns.

Mudros. Town and bay on the S. coast of the Greek island of Lemnos, in the Aegean Sea. During the Great War its port became the chief naval base for the Dardanelles operations, and in addition was used as a military base for the campaign in Gallipoli. The armistice between the Allies and Turkey was signed here, Oct. 30, 1918. See *Aegean Sea*; *Gallipoli*, *Campaign in*; *Lemnos*.

Mud Volcano. Small volcano, the cone of which consists chiefly of solidified mud. These volcanoes discharge mud and gases, chiefly hydrocarbons, and may reach a height of two to three hundred feet. They occur not only in volcanic

regions, but in non-volcanic areas, e.g. near Baku, on the Caspian Sea.

Muezzin (Arab. *mu'addhin*, one who calls to prayer). Official in a mosque who proclaims the times



Muezzin calling the faithful to prayer, from the painting by V. L. Gérôme

By courtesy of Goupil & Co.

of prayer. In the Mahomedan day there are five times for prayer: dawn, noon, 4 p.m., sunset, and midnight. The call, which is sounded from the minaret, consists of the following sentences: Allah is great (thrice); There is no God but Allah (twice); Mahomet is the Prophet of God (twice); Come to prayer (twice); There is no God but Allah (twice). Appointed by the imam (q.v.) of the mosque, the muezzin is an official of some importance, and in virtue of his office is entitled to a place in Paradise. See *Mahomedanism*; *Mosque*.

Muff (Old Fr. *moufle*, thick glove). Article of dress, open at either end, and made of fur, velvet, silk, etc., padded with cotton wool, and carried to keep the hands warm. In the 17th and 18th centuries muffs were used by men as well as women. Snuffkin or snoskyn is an old word for a muff.

Muffle. In metallurgy, a container used for smelting a sample of metal or ore, or for heating a metal article out of contact either with the heating fuel or with the products of combustion. Usually roughly box-like in form, and made of fireclay or other refractory material, closed except for a small opening at one end, it is placed with its contents in a furnace so that the hot gases may pass round it and heat it to the necessary degree. Muffles are also used in assaying and in tempering or hardening of metals.

Mufimbiri OR MFIMBIRO. Range of active volcanic mountains of Africa. They are N. of Lake Kivu, partly in Congolese territory and partly in Uganda, and attain an alt. of nearly 15,000 ft. They were first seen by Captain Speke in 1861. The range consists of eight prominent peaks, of which Karisembi, 14,780 ft. in alt., is the highest. The other principal peaks are Muhavura, Miken, Visoke, Sabinio, Namalagira, and Nina Gongo. See On the Congo Frontier, E. M. Jack, 1914.

Mufti (Arab., a teacher of the law). Mahomedan expounder of the law according to the Koran and oral tradition. A powerful class of theologians, the muftis deliver judgements and decisions on canon law, which are embodied in *fatwas* or memoranda. The Turkish Grand Mufti, known as Sheikh-ul-Islam, who is appointed by the sultan, is the theological head of the Mahomedan religion in Turkey, and by his *fatwa* can depose the sultan, as in the case of Abdul Hamid, 1909, or proclaim a Holy War, as was the proceeding adopted by Turkey when she entered the Great War, Nov. 15, 1914.

The word mufti is also applied to civilian costume worn by an officer. Of Anglo-Indian origin, the term probably likened the easy civilian costume to the flowing robes of the Mahomedan lawyers.

Muggletonians. English religious sect. It was named after Lodowick Muggleton (1609-98), an apprentice to his cousin, William Reeve, a Puritan, and a journeyman tailor. Muggleton declared that he stood in the same relation to Reeve that Aaron stood to Moses, and the two, professing the gift of prophecy and declaring that they were the two witnesses foretold in Rev. xi, 3-6, attracted a large following. They taught that God has a human body; denied the existence of the Trinity; held that the Devil became incarnate in Eve, and that God the Father suffered on the Cross, leaving Elijah to govern in Heaven while He came to earth to die. See Reeve and Muggleton's Transcendent Spiritual Treatise, 1652; Acts of the Witnesses, with Letters and Autobiography, L. Muggleton, 1699; Complete Collection of the Works of Reeve and Muggleton, 1756, reprinted 1832.

Mugwort (*Ariemtsia vulgaris*). Perennial herb of the natural order Compositae, native of Europe, Asia, and N. Africa. It has erect, reddish, grooved, and branching stems. The alternate broad leaves are deeply cut into long-pointed segments, and the lower surface is



Mugwort. Spray of foliage and flowers. Inset, left, single flower; right, segmented leaf

white and silky. The small reddish-yellow flower-buds form slender sprays. See Wormwood.

Mugwump. Political nickname. Derived from an American Indian word meaning great chief, it is applied in the U.S.A. to independent voters who do not support the programme of any party. The term, applied disparagingly, was flung, during the election of 1884, at all who declined to be satisfied with the policy of either party.

Mühlberg. Town of Germany. In Prussian Saxony, it stands on the right bank of the Elbe, 35 m. N.N.W. of Dresden. The church dates from the 13th century. There is a trade in timber and agricultural produce, while beet sugar is manufactured. After being long part of Saxony, the town was given to Prussia in 1815. Pop. 3,500.

Mühlberg is famous for the battle fought here between the emperor Charles V and John Frederick, elector of Saxony, April 24, 1547. With the assistance of Maurice of Saxony, Charles suddenly invaded Saxony, which its ruler, John Frederick, hastened from S. Germany to defend. The armies met at Mühlberg, where, after a short, sharp struggle, the emperor's troops, aided by the genius of Maurice, were victorious. John Frederick was taken prisoner and signed a treaty surrendering his electorate to Maurice.

Mühlhausen. Town of Germany, in Prussian Saxony. It stands on the Unstrut, 25 m. from Gotha, with which it is connected by rly. Of many old buildings, the chief are the medieval town hall and the churches of S. Mary and S. Blasius, both 14th century edifices. Around the old town are modern suburbs. There are manufactures of textiles, machinery, chemicals, and leather. After being in Thuringia, it was made a free city, but this privilege was taken away in 1802, and in 1815 it became part of Prussia. Pop. 35,000.

Muilrea. Mt. in the S.W. of co. Mayo, Ireland. It stands on the N. side of Killary Bay, one of the finest inlets in the country. Alt. 2,688 ft.

Muir Glacier. Alaskan glacier fed by the heavy snowfall common to the N.W. of N. America. It discharges into Glacier Bay, a fiord to the W. of Juneau. Nine ice streams flow from an amphitheatre on Mt. Fairweather, 35 m. across, to form the main stream, which is from 6 to 10 m. wide and terminates in an ice cliff at the head of the bay. The cliff was much broken in 1899 by an earthquake; it advances about 7 ft. daily during its period of greatest movement, but has receded 25 m. since 1794. The base of the cliff is 900 ft. thick and 760 ft. below sea level. Giant bergs break away and float seawards.

Muirkirk. Town of Ayrshire, Scotland. It stands on the river Ayr, 26 m. from Ayr, and is served by the Cal. and G. & S.W. rlys. The buildings include the parish church and the Baird Institute. The chief industries are coal and ironstone mining and ironworks, to the development of which the place owes its growth. Pop. 5,000.

Mukden. City of China, the capital of Manchuria and Fengtien (Sheng King) province, also known as Fengtien. Mukden is the cradle of the Manchu dynasty, which reigned over China for 268 years. In the vicinity are the tombs of the Imperial family. The circuit of the town walls is 10 m., with an inner wall of 3 m. containing the palace and government buildings. The town was opened to foreign trade by agreement with the U.S.A. in 1903. It is served by the Peking-Mukden Rly., and by the South Manchuria Rly. Pop. 172,000.



Mukden, Manchuria. Scene in one of the main thoroughfares

Mukden, BATTLE OF. Fought between the Russians and the Japanese, Feb. 20–March 10, 1905. In Oct., 1904, the Russians had attacked the Japanese positions on the Sha-Ho, and the rival forces were still occupying much the same lines. Both had strengthened their defences, the Russians holding a front about 60 m. long. Their general Kuropatkin had about 300,000 men; the Japanese under Oyama were almost equal.

Strengthened by the army that had just captured Port Arthur, Oyama proceeded to execute his carefully prepared plan for breaking the Russian front. On Feb. 20 a new Japanese army, the 5th, working through the mountains towards the Russian left, came into contact with the foe, and after severe fighting two passes were stormed.

On Feb. 27, Oyama began to develop his full plan. His centre opened an attack on the opposing Russians, but more important was the appearance, quite unexpected by the Russians, of the 4th army, the men of Port Arthur, upon their right flank. Kuropatkin, misled as to his foe's intentions, drew in his right wing, while the Japanese were curving round the two ends of his army. The Russians fought well, and the Japanese losses during some days of constant fighting were terribly high, but the danger to the Russian communications made a retreat inevitable. This took the form of a series of rearguard actions and after a time the Russians became demoralised. Mukden was evacuated by March 10, and battle and pursuit were soon over. The Russians lost 26,500 killed and 40,000 prisoners, besides a large number of wounded; the Japanese lost 41,000 killed and wounded. *See* Oyama; Russo-Japanese War; Sha-Ho, Battle of; consult also Famous Modern Battles, A. W. Atteridge, 1911.

Mula. Town of Spain, in the prov. of Murcia. It stands on the river Mula, a small tributary of the Segura, 20 m. W.N.W. of Murcia. Trade is carried on in wine, oil, and farm produce. In the vicinity are the Baños de Mula, with thermal sulphur springs. Pop. 11,900.

Mulai Hafid (b. 1875). Sultan of Morocco. Son of Mulai Hassan, he was born at Fez, and for some years was a staunch supporter of his brother, Abd-el-Aziz. The French interposition at Casablanca irritated

the native tribes, who in 1906 deposed Abd-el-Aziz and gave the throne to Mulai Hafid, but despite assistance from France, he was forced to abdicate the throne in favour of his brother Mulai Yusef, Aug. 11, 1912. *See* Morocco.



Mulai Hafid,
Ex-sultan of Morocco

Mulai Hassan III (1831–94). Sultan of Morocco. Son of Sidi Mulai Hafid, he succeeded his father in 1873 and acquired great popularity among his subjects by the vigour with which he crushed rebel tribes. He died June 7, 1894, and was succeeded by his son Abd-el-Aziz. *See* Morocco.

Mulatto (Sp. *mulato*, young mule). Half-breed, especially the offspring—and their descendants—of parents whereof one is of white, the other of a negro race. The hair is usually negroid, the colour intermediate. The offspring of a mulatto and a white is a quadroon (one-fourth black); of a quadroon and a white an octoroon (one-eighth black). *See* Negro.



Mulberry tree, black variety, in full bloom

Mulberry (*Morus*). Trees and shrubs of the natural order Moraceae, natives of the N. temperate regions. There are ten species, of which the best known are the black mulberry (*M. nigra*), the white mulberry (*M. alba*), and the red mulberry (*M. rubra*). All these have heart-shaped leaves with toothed edges, and inconspicuous greenish-white unisexual flowers, produced in spikes and wind-fertilised. The compound fruit is somewhat similar in form to that of the raspberry, but has a very different origin, the latter being the product of a single flower, whilst each mulberry is due to the coalescence of all the fruits from a spike of female flowers. The black or common mulberry, a native of the

Orient, was introduced to Britain in 1548, the first trees being planted at Syon House, Isleworth; and later James I fostered the planting of mulberry gardens around London, in the belief that the silk industry might be established there.

The tree succeeds in any deep, rather damp soil, but the two others named prefer a dry soil. The white mulberry, a native of China, was introduced to Britain in 1596, for the sake of its leaves, which are better for silkworm culture. Red mulberry, with long, purple, pleasant-flavoured fruit, is a N. American tree of larger proportions (40–70 ft. high). Mulberries may be raised easily from seed, but more expeditiously by large cuttings, or layering in autumn.

Mulcaster, RICHARD (c. 1530–1611). English schoolmaster and author. A native of Cumberland, he was educated at Eton under Udall, and at Christ Church, Oxford. He was the first headmaster of Merchant Taylors' School, London, 1561–86; vicar of Cranbrook, Kent, 1590; high master of S. Paul's School, London, 1596–1608, and became in 1598 rector of Stanford Rivers, Essex, where he died and is buried.

He wrote several educational works, including Positions, 1581. *See* Positions, ed. with Memoir, R. B. Quick, 1888.

Mulch. Dressing of moist stable manure, leaf mould, straw, bracken, or other manurial substance applied to soil round recently transplanted trees or shrubs. Its object is to afford protection from frost, conserve

moisture, and supply nutriment which rain will carry down to the roots of the plants.

Mule. Name strictly applying to a hybrid between a male ass and a mare. All the various members of the horse family, including asses, zebras, and quaggas, will interbreed, and in its broad sense the term mule is applied to all the resulting offspring. Almost all these hybrids are sterile, but a few cases of fertility have been recorded.

The rule among these hybrids is that the offspring resembles the father in appearance and the mother in size. Hence mules are large animals of ass-like character.

In order to secure size, mules are usually bred from the Poitou and Spanish jack-asses, which are



Mula arms



Mule. Specimen of the hardy draught animal, useful for rough work in hilly country

of exceptional height and are kept almost exclusively for this purpose. A good specimen of mule may stand 16 hands high at the withers and be almost equal in strength to a horse of the same size. The long ears, small hoofs, and tendency to a tufted tail always distinguish the mule from the horse.

Mules are exceedingly useful animals for draught and pack work, especially in mountainous and difficult country, being much harder than the horse, less liable to disease, less particular in the matter of food, of greater endurance, longer lived, and very sure footed. A mule is fit for work when four years old, is at its prime from eight to twelve, and will continue to work well till fourteen or fifteen. In spite of its proverbial character, the mule is not as a rule obstinate when well treated, but is particularly docile. See Animal; Horse; consult also Horses, Asses, Zebras, Mules and Mule Breeding, W. B. Tegetmeier and C. L. Sutherland, 1895.

Mule. Machine used for spinning. It was invented by Samuel Crompton and improved by Richard Roberts, both of whom were connected with the textile industry in Lancashire.

The mule is an intermittent



Mule used in cotton spinning. The machine illustrated has 1,300 spindles, spinning and winding 4,000 miles of thread in a day

mounted upon the movable carriage of the mule. The spindle is driven by a band from the cylinder known as the tin roller. In course of

machine for converting rovings into yarn, and it performs a complex cycle of movements. The rovings are drawn from large bobbins carried upon the upright creel at the back of the machine, and they pass through pairs of geared rollers which draft or elongate the lightly twisted roving. The material is carried forward to an inclined spindle



Mulgrave Castle, Yorkshire. Ruins of the Saxon stronghold built on the site of a Roman castle

operations the carriage carrying the spindles travels forward, thus stretching the roving, and during this period the spindle is turning at high speed without winding up the yarn. Stretching and twisting going on simultaneously, the weak places in the roving are continually being reinforced, as the twist lends strength to the weak portions. The carriage backs slightly, and the speed of the spindles is reduced.

The carriage begins to run in, and the yarn stretched and twisted on the outward journey is wound upon the spindles during the inward run, the position of the yarn being controlled meanwhile by the movement of faller and counter-faller wires.

The mule machine belongs pre-eminently to the Lancashire

cotton industry, and it gives a full and spongy yarn. Mules of a slightly modified type are used for woollen and, especially upon the Continent, for worsted. More floor space is occupied by mules than by the continuous spinning frames, and more skill is required in their manipulation, but with suitably adjusted mule machinery yarns of every variety from the coarsest to the ultra-fine are produced in perfection. The mule is capable of great delicacy, and its details have been the subject of immense study. See Cotton; Spinning.

Mulgrave Castle. Seat of the marquess of Normanby at Sandsend, near Whitby, in Yorkshire, England. In the grounds are the remains of the 11th century stronghold of a Saxon duke named Wada. About 1625 the property passed to Edmund, Lord Sheffield of Butterwick, created earl of Mulgrave, a title revived in 1812 in favour of Sir Henry Phipps, an ancestor of the marquess of Normanby.

Mulhacen OR MULAHACEN, CERRO DE. Mountain of Spain, in the prov. of Granada. The culminating point of the Sierra Nevada, it is the loftiest peak in Spain, reaching an alt.

of 11,420 ft. The snow line occurs at approximately 10,000 feet

Mülheim. Name of two towns and river ports in Germany, one of which is situated on the Rhine and the other on the Ruhr.

Mülheim-am-Rhein is in the Rhine province of Prussia. Standing on the right bank of the Rhine, almost opposite Cologne, it is virtually a suburb of that city, adjacent to Deutz. The handsome Gothic church is a modern edifice. The river harbour is commodious. It has manufactures of chemicals, textiles, electrical and other machinery and tobacco, and there is a trade in wine along the river. It became a corporate town in 1322, and its prosperity was largely due to the settlement of Protestants exiled from Cologne Pop. 51,000.

Mülheim-an-der-Ruhr is also in the Rhine province. It stands on the Ruhr, 16 m. from Düsseldorf, on the Westphalian coal and iron field. The chief building is the Great Church begun in the 12th century. Most of the others, which

include the town hall and others erected for public business, are modern. Machinery, textiles, glass, leather, and zinc goods are manufactured. There is a harbour, from which a good deal of coal is shipped. Pop. 112,000.

Mulhouse (Ger. *Mülhausen*). Town of France, in Alsace. It stands on the Ill, 56 m. S. by W. of Strasbourg, and is a centre of the cotton manufacture. Other industries include the making of woolen goods, chemicals, machinery, and hardware, and there is also a trade in wine and timber, which are sent along the Ill to the Rhine. The town has a medieval town hall, but few other memorials of its long history.

Made a free city in 1198, it was long a little republic leagued with Switzerland, but in 1797 it was united with France. In 1871 it passed, with the rest of Alsace, to Germany. Captured and lost by the French in Aug., 1914, it was restored to France in 1919. Just outside Mulhouse is a town for working men built by a former mayor, J. H. Dollfus. Pop. 95,000. See Alsace, Campaign in.

Mulkear. River of Ireland. It rises in two head streams—one in the W. of co. Tipperary and the other almost wholly in co. Limerick—and flows N.W. for 32 m. to the Shannon, which it enters 4 m. above Limerick city.

Mull. Name for a headland or long promontory, derived from the Gaelic. Examples of its use in western Scotland are the mull of Kintyre, and the mull of Galloway.

Mull. Island of Argyllshire, Scotland. It is 7 m. W. of Oban and separated from the mainland by the firth of Lorne and the Sound of Mull. The third largest of the Western Islands, it has a mountainous surface (Ben More, 3,169 ft.) and a rugged and deeply indented coast, fringed on the W. with a number of smaller islands. Grazing is the principal industry. There are a number of picturesque glens and fresh water lochs. Tobermory, in the N., is the chief town. Length 30 m., breadth 29 m. Pop. 3,800.

Mull. Sound or channel between the island of Mull and Morven peninsula, Argyllshire, Scotland. There is beautiful scenery along its shores. Its length is 20 m., and breadth from $1\frac{1}{2}$ to 3 miles.

Mullah or **Mollah**. Mahomedan term for a teacher or scholar, particularly one learned in civil and ecclesiastical law. It is also applied to a mosque officer, and in India is the usual term for a Mahomedan schoolmaster. The influence and fanaticism of the so-called "mad Mullahs" have caused serious disturbances in India and Somaliland. The raids by the leader of the rebel dervishes in the latter country caused punitive expeditions to be undertaken by the British, 1901-5. He was reported dead on many occasions after this, the last being in July, 1921. See Somaliland.



Mulhouse, France. The medieval town hall, showing covered entrance steps

Mullein or **AARON'S ROD** (*Verbascum thapsus*). Biennial herb of the natural order Scrophulariaceae, native of Europe and N. and W. Asia. The first year it forms a cluster of large, oval, lance-shaped, very woolly leaves from 1 ft. to 18 ins. long. The second year a stout, woolly, leafy stem 3 ft. high is sent up, ending in a long spike of yellow flowers. Formerly the wool from leaves and stem was utilised for lamp-wicks. See Aaron's Rod.

Muller, **FRANZ** (1839-64). Criminal of German parentage executed for the murder of a Mr. Briggs on the N. London Rly., near Hackney Wick, July 9, 1864. The murder, committed for the sake of robbery, was the first murder on an English rly. The government and the employers of the murdered man both offered substantial rewards for the discovery of the criminal. The latter had inadvertently exchanged hats with his victim, and this furnished a clue. He was arrested in New York in a sailing vessel in which he had fled, brought back for

trial, found guilty, and executed Nov. 14, 1864. The murderer cut down Mr. Briggs' top hat, and a top hat with a low crown was long known as a Muller hat.

Muller, **FRIEDRICH MAX**. See Max Muller.

Müller, **GEORGE** (1805-98). British philanthropist. Born near Halberstadt, Germany, Sept. 27,

1805, he was educated in Germany. In 1829 he came to England with a view to becoming a missionary to the Jews, but in 1830 undertook a pastoral mission at Teignmouth, Devon, becoming a naturalised British subject. He practised there the ideals he followed throughout his life, trusting to prayer to supply material wants. He went to Bristol, where he started a very prosperous orphanage. Soon he had over 2,000 children under his care, and later erected five large buildings to house them at Ashley-down. His book, *The Lord's Dealings with George Müller*, greatly helped him to obtain funds. He died at Bristol, March 10, 1898. See George Müller of Bristol, A. T. Pierson, 6th ed. 1901.

Müller, **JOHANNES** (1801-58). German physiologist. Born at Coblenz, July 14, 1801, he was educated at Bonn.

where he studied physiology. In 1826 he was made professor of physiology there, and in 1833 his reputation won for him a like position at Berlin. His important contributions to our knowledge of the complex mechanism of the human body have caused him to be regarded as the founder of modern physiology. He died April 28, 1858. Müller's chief work, *Handbook of Human Physiology*, has been translated into English by W. Baly, 1840-49.

Müller, **KARL OTFRIED** (1797-1840). German archaeologist. Born at Brieg, Silesia, Aug. 28, 1797, he studied at Breslau and Berlin, becoming professor of archaeology at Göttingen, 1819. Proceeding to Italy, 1839, and Greece, 1840, he examined ancient Athens, and began excavation at Delphi. He recast Hellenic and Etruscan study by utilising modern results. There are English translations of



George Müller, British philanthropist



Johannes Müller, German physiologist

his History and Antiquities of the Doric Race, 1839; a Scientific System of Mythology, 1844; Ancient Art and its Remains or a Manual of the Archaeology of Art, 1850; History of the Literature of Ancient Greece, 1840-2. He died at Athens, Aug. 1, 1840.

Müller, William John (1812-45). British painter. Born at Bristol, June 28, 1812, he was the



W. J. Müller,
British painter

son of a German, J. S. Müller, curator of the Bristol Museum. A pupil of J. B. Pyne, landscape painter, he developed great facility and painted numerous water-colours. He travelled on the Continent and in Egypt and Asia Minor, making many sketches on his tours, but exhibited only a few pictures at the R.A., the British Institution and Society of Artists. He died at Bristol, Sept. 8, 1845. In 1841 he published *Illustrative Sketches of the Age of Francis I.* The Tate Gallery possesses examples of his work in oils, as *Dredging on the Medway*, and *An Eastern Street Scene*, and a large selection of his water-colours.

Mullet. Name applied generally to the numerous species comprised in two unrelated genera of marine food fishes. The Red mullets (*Mullus*), of which there are about 40 species, are represented in Great Britain by the common red mullet of the markets. It has a fine flavour, and its beautiful



Mullet. Specimen of Red Mullet,
Mullus barbatus

colour adds to its attractiveness. Grey mullets (*Mugil*) include about 70 species, of which three occur in the British seas. They are found largely in the brackish water of river estuaries, and are important food fishes.

Mullet. In heraldry, a star of five, six, or more points. It is the mark of cadency (*q.v.*) for the third son and his house. When



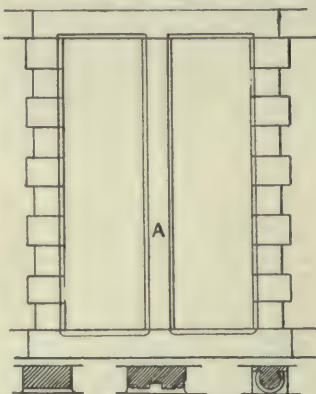
Karl O. Müller,
German archaeologist

borne pierced, mullets undoubtedly represent spur rowels. They differ from stars, the latter having wavy points. These, however, are distinctions of later heraldry, though there has always existed a confusion between "estoiles" and "molets." See *Cadency*.

Mulligatawny (Tamil, *milagattannir*, pepper water). Soup made hot with curry-powder. Boiled fowl and rice form a usual basis, though other meat may be used.

Mullingar. Market town and county town of co. Westmeath, Ireland. It stands on the Brosna river and the Royal Canal, 50 m. from Dublin. It has a station on the M.G.W. Rly., on which system it is a junction. The buildings include the Roman Catholic cathedral for the diocese of Meath and those erected for county business. There is a trade in agricultural produce, and a few manufactures, while important horse and cattle fairs are held. Founded by the English soon after the conquest of Ireland, Mullingar had two religious houses and a castle. Until 1800 it sent two members to the Irish Parliament. Market day, Thurs. Pop. 5,500.

Mullion. In architecture, the vertical division between the lights of a window. It originated with the



Mullion. Window with simple stone mullion, A. In section this may be plain or moulded, as shown beneath

reduction in width of the solid pier (*q.v.*) or piers between coupled lancet windows, and is mainly a development of late Gothic building. In church architecture and that of large domestic dwellings, the mullion is of stone, in lesser structures of wood. The traditional mullion of the 15th century is a splayed or moulded shaft, but with the spreading of Renaissance influences this gave place to a rectangular shaft scrolled with a floriated or arabesque design; the Tudor mullion is mainly of this description. In pure Renaissance work the mullion disappears.

Mullion. Village and parish of Cornwall. It stands on Mount's Bay, 5 m. from Lizard Head, and 7 m. from Helston. It has an old church, S. Melan's, in which are some interesting carved bench ends. Mullion Cove, or Porthmullion, is a fine cove. It can be reached by road from Helston. Pop. 730.

Mulock, DENAH MARIA. Maiden name of the British authoress, Mrs. Craik (*q.v.*).

Mulready, WILLIAM (1786-1863). British painter. Born at Ennis, co. Clare, Ireland, April 1



William Mulready.
British painter

1786, he removed with his family from Dublin to London in 1792. A pupil of Baynes, he received instruction from Banks, the sculptor, and entered the R.A. schools in 1800. In 1802 he gained the silver palette of the Society of Arts for painting, exhibited at the R.A. in 1804, and between 1807 and 1809 illustrated children's books. He painted mainly genre pictures in the style of the Dutch masters, but later developed a more personal manner. He died in Bayswater, July 7, 1863. Mulready's best pictures include *Choosing the Wedding Gown*, *The Sonnet*, *The Convalescent*, all in the Victoria and Albert Museum, South Kensington; *The Bathers*, *The Toy Seller*, both in the National Gallery of Ireland; and *The Last Inn* and others in the Tate Gallery, London.

Mulready designed the first penny postage envelope, issued in 1840. The Mulready envelope, as it was called, bore on its face an allegorical representation of Britannia sending out messages all over the world by means of elephants, etc., and was effectively caricatured by John Leech in *Punch*. As time went on, the envelopes became scarce, and perfect specimens are much valued by collectors.

Multan or **MOOLTAN.** Div. and dist. of India in the Punjab. The div. comprises the six districts of the S.W. of the prov. The people are chiefly Mahomedans. A third of the area is cultivated, wheat and cotton being the chief crops. The dist. consists of the S. of the Bari doab. The rainfall is only 6 ins. per annum, and cultivation, which only covers a quarter of the area, is entirely dependent upon irrigation. Wheat is the main crop. Area, div., 31,218 sq. m.; dist., 6,107 sq. m. Pop., div., 3,821,000; dist., 815,000.

Multan OR MOOLTAN. City of India, in the Punjab, on the Chenab below its confluence with the Ravi. A town of great antiquity, it has been identified as the capital of the Malli, who were conquered by Alexander the Great when he invaded the Punjab. The principal buildings are two Mahomedan shrines and the remains of an old Hindu temple. Multan is a great trading centre, which collects cotton, wheat, wool, etc., for export S. down the Indus valley, and supplies Afghan traders from Kandahar with indigo, cottons, sugar, and shoes in exchange for drugs, raw silk, and spices. It has manufactures of shawls and carpets. Pop. 99,200.

Multiplane. Aeroplane in which the lifting surfaces are disposed in the form of a number of wings one above the other. The name is usually confined to a machine having more than four such sets of surfaces. Multiplane machines have not yet been built successfully, though considerations of span and engineering design will probably make them one of the machines of the future. See Biplane; Monoplane; Triplane.

Multiplate. Machine for the rapid production of stereotyped plates for use in rotary newspaper presses. A development of the autoplate (*q.v.*), when once the matrix or mould of a page of type has been fixed in it, it holds the matrix firmly in full view of the operator, and by means of cams and levers performs the various operations of casting, trimming, and delivering the finished plate in about 15 seconds. See Printing.

Multiple (Lat. *multiplēx*, with many folds). Something consisting of many parts, *e.g.* a multiple star. In arithmetic, a multiple is a number which contains another number without leaving a remainder. Thus 40 is a multiple of eight. The least common multiple is the smallest number that will contain two or more numbers. Thus 12 is the least common multiple of three and four. The multiple shop system is a term used for the system whereby a single business owns a large number of shops.

Multiplepoinding. In Scots law, a legal process to determine the ownership or division of property, to which two or more persons claim to be entitled. It is of the same nature as the English interpleader (*q.v.*). See Poinding.

Multiplication. In mathematics, a process for repeating or adding any given number or quantity a certain number of times. The symbol for multiplication in arithmetic is \times or the period mark, and

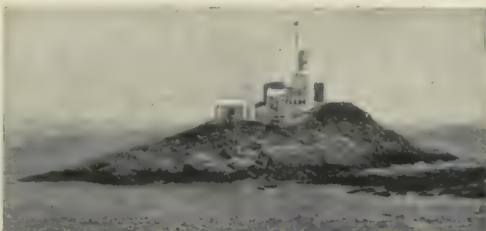
in algebra the \times , period, or simple juxtaposition, *e.g.* $a \times b$; $a.b$; and ab all mean a multiplied by b . By the use of indices the multiplication of $a \times a \times a$ may be expressed as a^3 and so on, and of algebraic quantities by the use of brackets.

The operations of multiplication become laborious in actual practice where large numbers are being dealt with, and many methods have been devised to abbreviate the actual working. The use of logarithms, the slide rule, and various calculating machines enables either approximate or accurate results to be obtained very quickly. To lessen the work where mechanical means are not employed or the use of logarithms, tables of factors have been compiled for all numbers up to 10,000,000. Another series of tables are those known as quarter squares. These tables depend upon the equation $ab = (a+b)^2/4 - (a-b)^2/4$, and enables the product of any two numbers to be obtained by subtracting the quarter square of their difference from the quarter square of their sum. Quarter squares of all numbers up to 200,000 have been published. See Algebra; Arithmetic; Calculating Machines.

Mulvaney, PRIVATE TERENCE. One of the principals in Rudyard Kipling's series of stories of Soldiers Three. He is a large-hearted humorous Irishman, to whom his two contrasting companions are devoted.

Mum. Name given to a fermented malt liquor prepared from wheat and bitter herbs. The grist is mixed with pulse and oatmeal before mashing, and the resulting liquor is dark in colour and of a sweet flavour.

Mumbles. Village and watering-place of Glamorganshire, Wales. It stands on the W. shore of Swansea Bay with a station on



Mumbles, South Wales. Lighthouse and telegraph station off Mumbles Head
P. 111

the Swansea & Mumbles Rly. Oyster fishing is carried on. Mumbles Head juts into the western end of the bay. It includes two small islands, on one of which is a lighthouse.

Mumbo Jumbo. Name of a spirit worshipped by the Mandingos of W. Africa. Mungo Park relates that he is invoked for the purpose of punishing women offenders, after which a man appears, disguised in the garb of Mumbo Jumbo, ties the culprit to a post and scourges her. In a wider sense the term is applied to any object of irrational superstition.

Mummius, LUCIUS. Roman general who received the name of Achaicus as a result of his conquest of Greece. The decisive battle of the war was fought with the army of the Achaean League (*q.v.*) in the neighbourhood of Corinth, in 146 B.C. The battle was followed by the plunder of the city, many of its art treasures being taken to Rome.

Mummy (*mumiya*, Arab. bitumen). Dead body embalmed with preservative substances in preparation for burial. In neolithic Egypt interment in skins or mats in sandpits resulted in a measure of preservation by natural desiccation. When closed coffins were devised, the speedier decay of the body led to experiment with artificial preservatives, at first perhaps limited to crude natron. The earliest attempt at mummification yet found came from a IIInd-dynasty tomb at Sakkara; the earliest mummy enswathed in bandages smeared with resinous paste from a Vth-dynasty tomb at Medum.

In the course of centuries other substances were employed, including bitumen, caustic soda, balsams, spices, honey, and drugs. By the XXIst dynasty, after 1100 B.C., the process involved incision of the left flank with a flint knife for removing the viscera, extraction of the brain, usually through the nostrils with bronze hooks, and stuffing of the cavities with packing materials.

Each limb and digit was separately swathed in mummy-cloth, consisting of linen bandages 2 ins.

to 10 ins. wide and up to 17 ft. long, sometimes fringed, and often inscribed. An outer sheet 8 ft. by 4 ft. lay over all.

The bodies, laid out in the extended position, were protected by amulets and ritual texts, enswathed in

bead network, accompanied by mummy-like statuettes called ushabtis, enclosed in one or two mummy-cases of sycamore, cedar, cartonnage, or faience, protected by oblong coffins, and in the case of

royal or wealthy personages enshrined in stone sarcophagi. The face was treated with fidelity, sometimes by encasing in a plaster mask, out of which grew, after 100 B.C., the Greco-Roman custom of placing portraits in tempera over the enswathed head. Christian Copts continued the practice in modified forms, and it survived until about A.D. 700.

Mummification was applied also to sacred animals, such as the particular cat that personified the Bast goddess, and the bull sacred to Apis. Afterwards all animals of the species secured this form of immortality, and great cemeteries have been found of cats at Bubastis, fish at Esna, ibises near Abydos, and the like. These mummified animals were sometimes gilded and enclosed in coffins.

In 1881 and 1898 there were recovered at Thebes hoards of royal mummies, which were removed from their original tombs in order to frustrate tomb-robbers. Removed to Cairo, they were found to include the mummified remains of famous Pharaohs of the XVIIIth and XIXth dynasties, including Thothmes III, Amenhotep III, Seti I, Rameses II, and Menephtah. See Animal Worship; Burial Customs; Canopic Jars; Embalming; consult also The Mummy, E. A. W. Budge, 1893. **H. G. Harmer**

Mumps or EPIDEMIC PAROTITIS. Acute infectious disease. The micro-organism responsible has not yet been isolated. It is most frequent in childhood and adolescence, males being more often attacked than females, and is generally more prevalent in spring and autumn than in the other seasons of the year. The incubation period is from two to three weeks. The onset is marked by fever, which rarely exceeds 101° F., but exceptionally may be as high as 103° F. or 104° F. Pain is felt below the ear, and within 48 hours there is marked swelling of the neck and cheek. A day or two later the other side usually becomes swollen as well.

The patient finds difficulty in opening his mouth, and speech and swallowing are impeded. After a week or 10 days the swelling subsides and recovery is rapid, but risk remains of conveying the disease to others for several weeks longer. Swelling and inflammation of the testicles in males and of the breasts and ovaries in females occasionally arise, but usually are not serious. Treatment consists in keeping the patient in bed with light diet and attention to the bowels. Pain in the neck may be relieved by applying either hot or cold compresses.



Mummy. Embalmed bodies of adult and child, about 3,000 years old, excavated from rock tombs near Assiut, Egypt

Mun, ALBERT ADRIEN MARIE, COMTE DE (1841-1914). French politician and man of letters. Born



Comte de Mun, French politician

at Lumigny, Seine-et-Marne, Feb. 23, 1841, a great-grandson of C. A. Helvétius, he entered the army from St. Cyr in 1862, spent some years in African service, and took part in the Franco-Prussian War, being captured with the Metz garrison. Leaving the army in 1875, he turned to politics, and became known as one of the founders of the Catholic workers' societies, and, although hostile to socialist and revolutionary doctrines, was a strong supporter of the workers' rights of organization to secure better conditions. In 1876 he was elected deputy for Pontivy. Following the encyclical of Pope Leo XIII, 1892, he supported the republican constitution of France. Elected to the Académie Française in 1897, he died at Bordeaux, Oct. 6, 1914. Among his many works are his collected speeches, 7 vols., 1888-1900; La Loi des Suspects, 1900; L'Organisation Professionnelle, 1901; Contre la Séparation, 1905; and collected war articles, La Guerre de 1914, 1914.

Muncaster, JOSSLYN FRANCIS PENNINGTON, 5TH BARON (1834-1917). British peer. Born Dec. 25, 1834, he was educated at Eton.

He entered the army and served with the 90th Light Infantry in the Crimea, taking part in the storming of the Redan, Sept. 8, 1855. Later, he exchanged into the Rifle Brigade, and left the army with rank of captain. He succeeded his brother in the Irish title in 1862. From 1872-80 he represented W. Cumberland in the House of Commons, and

the Egremont div. of Cumberland, 1885-92, and was created a baron of the U.K. in 1898. With Lady Muncaster and others he was captured on April 11, 1870, by brigands at Oropos during an excursion to the plain of Marathon, on which occasion some of the party were killed. He was liberated to secure the ransom demanded by the brigands, who, hearing that the Greek government had dispatched troops to capture them, murdered their captives. The ladies of the party were liberated before this tragedy. Lord Muncaster died at Muncaster Castle, Mar. 30, 1917.

Muncaster Castle. Residence at Ravenglass, Cumberland, England, until 1917 the seat of Baron Muncaster. On the site of a Roman fortress known as Mulcastre, or the castle on the meols or sandhills, it is half way up Muncaster Fell and commands beautiful views up the valley of the Esk. In the possession of the Pennington family since the Conquest, it was rebuilt in 1800. After the battle of Hexham, 1461, Henry VI took refuge here, and is said to have given to Sir John Pennington the curious glass cup, known as The Luck of Muncaster, from which the family have been baptized ever since.



Muncaster Castle, Cumberland. Garden front and terrace of the former seat of Baron Muncaster

Valentine

Munchausen OR MÜNCHHAUSEN, KARL FRIEDRICH HIERONYMUS, BARON VON (1720-97). Hero of incredibly wonderful adventures. Born at Bodenwerder, in Hanover, May 11, 1720, he was engaged as a cavalry officer in Russian campaigns against the Turks, and died Feb. 22, 1797. A collection of the stories attributed to him, compiled by his compatriot and acquaintance, Rudolf Erich Raspe, and taken in part from Bebel's *Facetiae Bebelianae*, 1508, and from Lange's *Dolcine Academiae*, 1765, was first published in English under the title of Baron Munchausen's Narrative of his Marvellous Travels and Campaigns in Russia, 1785. Later editions contain matter stolen from Lucian's True History and stories designed to ridicule Joseph Montgolfier's balloon ascents, James Bruce's African explorations, and other contemporary sensations. Many, however, of the stories contained in the first edition may be regarded as authentic Munchausen, whether actually true or false.

Muncie. City of Indiana, U.S.A., the co. seat of Delaware co. It stands on the White river, 55 m. N.E. of Indianapolis, and is served by the Chicago, Cincinnati, and Louisville and other rlys., including an extensive inter-urban electric system. It has important glass and glassware industries, and manufactures iron and steel, motor vehicles, clothing, and gas engines. Coal and natural gas are obtained locally. Settled in 1834, Muncie received a city charter in 1865. Pop. 36,500.

Munda. Primitive tribe in N. India. Numbering in 1911, 574,434, mostly in Chota Nagpur, Bihar and Orissa prov., 91,298 are on Assam tea plantations. Dark-brown and long-headed, one-third of them are Hinduised, and 80,292 are Christian. The Munda sub-family of languages, spoken by 3,843,223 people, includes the Santali, Mundari, Bhumij, and Ho dialects of Kherwari, besides Juang and Kurku. It forms, with the Mon-Khmer sub-family, the Austroasian family. See Austria; Koli.

Munday, ANTHONY (1553-1633). English dramatist and miscellaneous writer. Born in London, he was in turn stationer's apprentice, actor, writer of pamphlets against the Jesuits, Messenger of the Queen's Chamber, and City pageant-writer. Concerned in 18 plays, among them Sir John Oldcastle, and The Downfall of Robert, Earl of Huntingdon, he translated romances, including Palladino of England, from the French and Spanish, wrote ballads, and revised Stow's Survey of London. An industrious but inferior writer,

he was attacked by Ben Jonson and Marston. He was buried in S. Stephen's Church, Coleman Street.

Mundella, ANTHONY JOHN (1825-97). British politician. Born in Leicester, March 28, 1825, of mixed



A. J. Mundella,
British politician
Russell

Italian and English parentage, he was apprenticed to a hosiery manufacturer, and in 1858 had become a partner in the Nottingham firm of Hine & Co. Active in municipal politics, a town councillor, and volunteer officer, he won wider fame in 1866 by his successful establishment of a conciliation board for the settlement of trade disputes, one of the first of its kind.

In 1868 Mundella was returned as a strong Radical to the House of Commons as M.P. for Sheffield. In 1880 he entered Gladstone's government as vice-president of the council, and as virtual minister for education was responsible in 1881 for the Act which extended the system of compulsory education begun in 1871, and in 1882 for a new and most important education code. He left office in 1885, but returned for a few months in 1886 as president of the board of trade, where he created the labour department. In 1892 he returned to the board, and continued his efforts to better the conditions of workers, but retired in May, 1894, owing to a public inquiry into the liquidation of a company with which he had been connected. He was, however, returned to Parliament unopposed for the Brightside Division of Sheffield. He died July 21, 1897.

Munden, JOSEPH SHEPHERD (1758-1832). British actor. Born in London, he worked for a time in a shop before joining a strolling company. In the provinces he made a reputation as a comedian, and was also the manager of a group of theatres. He appeared in London in 1790, and at Covent Garden and The Haymarket became the most popular comedian of his time. In 1811 he left London, but he returned in 1813, and played at Drury Lane until his retirement in 1824. He died Feb. 6, 1832. Munden played a great number of parts, including several of Shakespeare's comic characters, while he appeared in The Beggar's Opera, Tristram Shandy, Every Man in His Humour, and other plays.

Münden. Town of Germany, in the prov. of Hanover, Prussia. It is situated at the point where the

Fulda and Werra join to form the Weser, 15 m. S.W. of Göttingen. Chemicals, rubber, celluloid, and cigars are manufactured, and coal is mined in the locality. The town was besieged by Tilly in 1626. Pop. 11,000.

Mundesley. Watering-place of Norfolk. It is 7 m. from Cromer with a station on the Mid. and G.N. joint rlys. The encroachments of the sea have been partly stopped by sea walls. Pop. 770.

Mungo. Short, fine, woollen fibre recovered from densely compacted rags or cloth-cuttings. It is used in conjunction with longer fibre in manufacturing new cloth, especially in obtaining a close and fine surface upon the new goods.

Mungo (c. 518-603). Scottish saint, also known as S. Kentigern (q.v.). The name Mungo is formed from two Gaelic words meaning "dear one."

Munich (Ger. München, from Lat. *Forum monachorum*, monks market). Third largest city of



Munich arms

Germany, capital of the republic of Bavaria. It stands on the left bank of the Isar, at 1,700 ft. alt. on a plain 25 m. N. of the Bavarian Alps. Essentially a modern city, it is one of the best-built capitals of Europe. Brewing is the chief industry, and machinery, rifles, and scientific instruments are manufactured. Other industries are mainly in the applied arts, including bronze casting, silver work, photography, process engraving, wood carving, stained glass, carpet and porcelain manufacture. Munich is the centre of the S. Bavarian rly. system.

The walls of the old city have been replaced by spacious boulevards and public gardens, but two gates remain, the Karlstor and Isartor. The modern city is regularly built, and extends mainly to the N. and W. The chief suburbs are Schwabing in the N., Neuhausen in the W., Sendling in the S., and Haidhausen and Giesing across the Isar. The English Garden is a beautiful public park of 600 acres.

Among the numerous other open spaces are the Court Garden, with arcades containing frescoes; the Königsplatz, with the Propylaea, a classical gateway commemorating Greek independence; the Maximiliansplatz, with the fine Wittelsbach fountain, erected 1895; and the extensive gardens along the river. The two finest streets are the Ludwigstrasse, running N., and the Maximilianstrasse, running

W., and expanding, before crossing the Isar, into the forum, flanked by government offices, etc.

The oldest church is S. Peter's, of the 12th century. The cathedral, dedicated to Our Lady and built 1468-88, is a heavy Gothic building of brick with a lofty vaulted roof and twin towers crowned by wooden cupolas, 318 ft. high. It contains the elaborate monument, erected in 1622, to the emperor Louis the Bavarian. Other notable churches are S. Michael's, 1583-97, the baroque Theatine church, and the basilica of S. Boniface, 1850.

The old town hall of the 14th century contains a fine hall; near it is the new town hall, a large Gothic pile. The former royal palace is a very large group of buildings. The oldest part was built by the elector Maximilian I, 1598-1616, and the newest portions, including the sumptuous Byzantine chapel, were designed for King Louis I by Klenze. Other important buildings are the courts of justice; the university, removed from Landshut in 1826; the national library, containing over 1,100,000 volumes and a rich collection of MSS.; and the very large national theatre. The château of Nymphenburg, 1662-1728, lies in the W. outskirts.

Its rich art collections are the glory of Munich. The Glyptothek or sculpture gallery contains the restored pediment groups from the



Munich. Plan of the capital city of Bavaria, showing the business quarter with the principal public buildings

temple of Aegina, the Apollo of Tenea, the Barberini Faun, and much Egyptian, Greek, Roman, and modern sculpture. The old

picture gallery is rich in Dutch and Flemish masters, especially Rubens, and contains also good examples of Raphael, Titian, Dürer,



Munich, Bavaria. 1. Courts of Justice, built in 1897. 2. New Town Hall, in Gothic style, 1874-1905. 3. Hall of Fame and colossal statue of Bavaria, designed by Schwanthaler. 4. Bavarian National Museum, erected in 1894, containing large industrial and archaeological collections. 5. Court Theatre, and bronze statue of King Max Joseph, by Rauch

Holbein, etc. The new picture gallery and the Schack gallery contain collections of modern paintings. The Bavarian national museum is a storehouse of the arts of Germany from prehistoric to modern times, especially of the Middle Ages. The German Museum houses mechanical models, scientific apparatus, etc. Other collections are the museum of the academy of science, that of industrial art, and the ethnographic and military museums. The academy of art is of world-wide reputation, and there is an important school of applied art.

Munich was an obscure village belonging to the Benedictines when Henry the Lion, duke of Bavaria, established a mint and market-place there in 1158. On his fall it passed to the house of Wittelsbach. Louis, duke of Bavaria, made it his residence in 1255. Burnt in 1327, it was rebuilt by the emperor Louis the Bavarian. Maximilian I (d. 1651) and subsequent electors embellished the city with public buildings and works of art, but Louis I (1825-48) inaugurated its modern development and made it the artistic metropolis of Germany. It figured prominently in the revolution of Nov., 1918, in which Bavaria became a republic. Pop. 630,000. *See* Bavaria; Eisner, Kurt; consult also Munich: History, Monuments, Art; H. R. Wadleigh, 1910.

Municipal Bank. Bank owned by a municipality. Such banks are not run primarily for profit, but after paying their expenses and a small rate of interest to depositors hand over any surplus to municipal undertakings, or to relieve rates.

The first municipal savings bank was established in England in 1916 at Birmingham. It was intended to facilitate the investment of savings of the working classes in securities issued for the purposes of the war. Neville Chamberlain, then lord mayor, took the lead in the movement, which had to receive the sanction of Parliament. The latter handicapped the scheme by highly restrictive provisions, chief among which was the requirement that the bank should not receive deposits except from employed persons through their employers, either by way of deductions from wages or otherwise.

The Birmingham bank was managed by a committee of five members, four of whom had to be members of the city council. Interest was paid at the rate of £3 10s. p.c. Payment of deposit was by way of coupons, gummed into a book, and when £1 had been reached the

worker took his book to the bank, where an account was opened in his name and a pass-book given. Seven days' notice was required for withdrawals. Under the original scheme the bank was only allowed to continue in being until three months after the termination of the war, but its success was such that it was maintained indefinitely. In one month (May, 1920) the deposits reached the total of £93,000, and 2,494 new accounts were opened.

Municipal Corporations Act. Measure passed by the Parliament of the United Kingdom in 1835 for reforming the municipal corporations of England and Wales. Until then the boroughs were governed in a great variety of ways, and the corporations were frequently corrupt and never democratic. The Act provided a uniform constitution for all boroughs. This consists of a council composed of mayor, aldermen, and councillors. The councils are elected by all ratepayers for three years, and the aldermen by the councillors for six. There is one alderman for every three councillors. The mayor is elected by the council every year. An Act of 1882 made this constitution compulsory, and one of 1893 abolished all corporations that did not comply with the regulations, except only those of the city of London and Winchester. The burghs of Scotland were regulated on similar lines, as were the few boroughs of Ireland. *See* Borough.

Municipality. Word derived from the Latin *municipium*, a term which was applied to urban communities subject to Rome, whose members were liable to all the burdens of Roman citizenship and enjoyed the more important of its privileges. These privileges included a large measure of local autonomy. At the present day the word is used to connote any corporate city or town organized for self-government. *See* Borough.

Municipal Kitchen. Food depot or shop run by a local authority. Originating as more or less charitable relief measures in times of distress or unemployment, the establishment by municipalities of kitchens, where soup and bread or regular meals can be obtained at a trifling cost or gratis, is now seriously advocated by labour organizations in most countries. By purchasing its supplies direct and on a large scale, the local authority can supply meals below the price of those at the ordinary restaurants or eating-houses.

Experiments carried on in Britain during the abnormal conditions of the Great War afford

little evidence of the feasibility of the municipal kitchen. Those that were established were in reality state-aided, although their management was entrusted to the local authorities. *See* National Kitchen.

Municipal Trading. Term used for the system by which municipalities engage in trading operations, such as the provision of water, gas, electric light, tramways, markets, and other public services. Towards the close of the 19th century there was great activity in this direction, and, in addition to the public services mentioned, many municipalities entered upon housing schemes, while some began to supply certain kinds of food.

The opening of municipal banks in the 20th century may be regarded as an extension of municipal trading, but the activities imposed on the municipalities during the Great War in the direction of supervising the distribution of food fall into a different category. In some European cities municipal trading is carried on extensively; for instance, in liquor at Gothenburg. Municipal currency notes are issued in certain French towns. The growth of municipal trading aroused much controversy as to its merits and demerits, and each side produced figures to prove its case. One pointed to large sums paid to relieve the rates; the other drew attention to losses made, and to methods of book-keeping which failed to show the true position.

The general tendency to-day is against any great extension of municipal trading, although it is recognized as essential in certain directions. Apart from the question of profit and loss, the main arguments against it are that it discourages private enterprise, and tends to corruption by making large bodies of men the employees of public authorities. On the other hand, it acts as a check on monopoly, and seems suited for providing essential services, e.g. water, in which competition is difficult or impossible. In 1900 and 1903 Parliament appointed select committees to inquire into the principles that should govern municipal trading. These recommended that professional accountants should be employed to audit the accounts, which should be kept separate from the general accounts, and that provision should be made out of revenue for the repayment of loans. *See* Socialism.

Muni River Settlements or Rio Muni. Mainland portion of the colony of Spanish Guinea (q.v.).

MUNITIONS: A WAR INDUSTRY

F. A. Mackenzie, Author of *Through the Hindenburg Line*

In addition to this general sketch this Encyclopedia has articles on all munitions, including explosives, e.g. Ammunition; Artillery; Barbed Wire; Bomb; Gas Helmet; Gun; Lyddite; Melinite; Paravane; Shrapnel; Torpedo, etc. See the articles Aisne; Marne; Neuve Chapelle and other battles; also Krupp

The term munitions (Lat. *munire*, to fortify) is applied generally to weapons and explosives of every kind, whether offensive or defensive, used in warfare, including not only artillery and ammunition, but also tanks, gas masks, torpedoes, paravanes, barbed wire and military stores of all kinds. The scale on which the Great War of 1914-18 was waged created an unprecedented demand for munitions in every belligerent country, and there was enormous activity in this direction. In the autumn of 1914 the British army was unprepared for the kind of fighting that lay ahead. Its shells were few in number and nearly all shrapnel, unsuitable for trench warfare. Its infantry was highly trained in the use of the rifle and amply provided with small arms ammunition, but was without mortars, hand-grenades, and bombs.

At the outbreak of the war Britain had 456 guns and about 180 aeroplanes; the guns could not fire more than 2 m. into the air; only two machine guns were provided to each battalion, or 24 to a division. There were German fuses for the shells, German sights for the guns, German magnetos and German plugs for the motor transport and aircraft, German optical glasses for the binoculars, German high-speed steel for the machine-tools, and German spelter for gun-metal and other alloys. When it became necessary to manufacture high explosives it was found that Britain had been depending on Germany for sulphuric acid and toluol. The one high explosive made in Britain in the early days was lyddite.

A False Economy

During the trench war in the winter of 1914-15, Sir John French repeatedly asked the government for more high explosives and more shells. He was told that he must economise. In the spring of 1915 the guns were rationed over large parts of the front to four shells a gun a day, with the understanding that these were not to be used unless necessary. The men made their own hand-grenades in the trenches from empty jam and meat tins. The munition plants were working at half pressure; few were running night shifts. There were rigid trade union regulations against dilution of labour.

The stories told by returned soldiers aroused a suspicion in England that all was not right. Asquith, speaking at Newcastle-on-Tyne, April 20, 1915, emphatically denied that there was any shortage. "There is not a word of truth in that statement," he declared, "which is the more mischievous because, if it were believed, it is calculated to dishearten our troops, to discourage our Allies, and to stimulate the action and the hopes of our enemies." He explained later that he had made the most careful inquiries of Lord Kitchener, and spoke on his authority.

The military correspondent of *The Times*, after returning from the front, published a statement on May 14 that some British attacks during the offensive at Festubert had failed because of the lack of high explosives to dislodge the enemy from his strong points. A week later *The Daily Mail* published an article, *The Tragedy of the Shells*, attacking Lord Kitchener because he "had starved the army in France of high explosive shells."

Lloyd George takes Control

The article aroused resentment, but it was soon realized that *The Daily Mail* was right. Five days later the government announced the creation of a ministry of munitions, and Lloyd George resigned the office of chancellor of the exchequer to organize the new department. He undertook a crusade to arouse the nation to the necessity of a great munition-making campaign. An Act was passed in June, 1915, setting up the ministry of munitions and giving it almost absolute power to take what land or buildings it required, to engage what labour it wished, and to make conditions governing labour for the period of the war. The board of trade was constituted referee in all disputes between employers and employed; lock-outs and strikes were forbidden, employers being liable to a fine of £5 a day for every worker locked out, and employees to the same fine for striking. The profits of controlled establishments, that is, establishments having to do with manufacture for the ministry of munitions, were limited to not more than 20 p.c. over the average amount of net profits for two

years before the war. This was later on supplemented by a valuable scheme of costing, by which prices were greatly reduced.

At first employees were not allowed to leave one establishment for another without permission, but later leaving certificates were granted. Munition workers were given a badge as an honourable sign of distinction. The ministry was greatly criticised on one occasion, shortly after the passage of the Act, when, on the miners of South Wales striking, it did not impose fines on them, but persuaded them to return to work. The Act, however, succeeded in its purpose. Munitions were produced.

Results of the Campaign

A campaign was begun to enlist labour for war factories. Piece work was established and workers were encouraged to earn as much as they could. Before the end of the war there were 2,300,000 men and 900,000 women engaged on the production of munitions. Women of every class volunteered for the hard, dangerous, and physically exhausting work of the machine shops, explosive factories, and steel works. While there was undoubtedly some waste and overlapping in the work of the ministry, these were, when all the circumstances of the hasty creation of a vast enterprise were numbered, insignificant compared with the results accomplished. Special munition towns were built at Gretna and elsewhere. Twenty-six national shell factories were begun. The national projectile factory built by Cammell Laird at Nottingham may be taken as an example. The factory was proposed in July, 1915. Within a week Cammell Laird had their scheme prepared. On Aug. 17 the scheme was sanctioned. Two days later the first sod was cut. By April, 1916, half the machines were delivered and production begun, and a year after starting building, the place had turned out over 40,000 9 in. and 6 in. shells.

Production was divided between the great munition firms, assisted by thousands of small manufacturers all over the country and the government factories. In some cases private firms, in addition to managing their own works, managed national factories for the government. To house the tens of thousands of fresh workers at the government arsenal at Woolwich, where 27,000 women alone were employed, a new town was built at Well Hall, in Kent. To facilitate the transport of munitions to France a secret port was built at Richborough (q.v.) in Kent. A train ferry across the Channel and a

barge service were opened. Railway trucks were run directly on the train ferries, taken across to France without unloading, run on the rails there and carried straight to their destination.

The work of the ministry covered much more than production. Lord Moulton turned his own home into a state department for the improvement of explosives. He became, under the ministry, director-general of explosives, and a vast chemical research department was created. New propellants were evolved and vast plants were erected for the production of nitric, sulphuric, and picric acids and ammonium nitrate. National industries not at first apparently directly connected with the war, like soap-making and dye production, had to be directed in order that they should yield the maximum amount of necessary chemicals, such as glycerine, for war service. When poison gas was introduced by the Germans the chemists had not only to provide protection for their own men against the German gas, but to supply the army with still more effective and destructive gases in reply, which they did. They produced the best gas mask and the most fatal gases known.

The Coming of the Tank

Old weapons were improved and enlarged and new ones invented. Guns were built bigger and bigger until at last an 18-in. gun was evolved, weighing 152 tons and firing projectiles of 3,320 lb. The supply of machine guns was enormously increased; the older type, such as the Maxim-Nordenfeldt, being supplemented by lighter kinds, notably the Lewis. Wonderful trench guns were evolved, of which the Stokes, invented by a civilian, was a striking example. Tanks were built so secretly that the Germans were taken completely by surprise when they were first used at the battle of the Somme. The first types were clumsy and slow, but they were rapidly improved; towards the end of the war Britain was building whippet tanks guided by one man, that could travel at 8 m. an hour. The tanks did great service in helping the armies to break through the Hindenburg line and other German defences. In the manufacture of aeroplanes Britain made up for early deficiencies once the work was seriously undertaken, and in the end established command of the air.

The British munition departments were soon manufacturing vast quantities for the Allies as well as Britain's own armies. The

production of guns and shells had reached such a point that it was possible to make up all losses at the front and to keep the guns supplied with munitions in quantities never dreamed of before. In Mar.-April, 1918, during the German offensive, the British armies lost 1,000 guns, vast quantities of big gun ammunition, 4,000 machine guns, 200,000 rifles, 250,000,000 rounds of small arms ammunition, 700 trench mortars, and 200 tanks. Within a fortnight every loss was replaced, in many cases with superior weapons.

In Aug., 1918, when the final British offensive began, the guns fired 2,900,000 rounds a week. By Oct. this had increased to 3,500,000 rounds. On the day the British army broke the Hindenburg line the guns fired 943,837 shells, or more than were fired throughout the whole of the South African war. It was able to keep such a continuous and devastating fire on the German positions that the spirit of the enemy soldiers was broken. Every gun had all the shells that it wanted. Immediately any gun showed any sign of wear it was quickly taken back to England for repair and a new one was ready to replace it.

The total production of the ministry of munitions during the war was:

| | |
|-------------------------|---------|
| Guns (new) | 25,430 |
| Guns (repaired) | 9,170 |
| Machine Guns | 239,850 |

In addition Britain supplied 4,134 m. of broad gauge and 2,745 m. of narrow gauge railroad track; 3,333 locomotives, and 77,724 railway wagons. The anti-aircraft guns at the end of the war were firing 5 m. into the air, and Zeppelin raiders were attacked with special chemical bullets which set the enemy aircraft afire. Within three years the production of poison gas was increased from five tons to about 720 tons weekly.

The way in which the production rose can be judged by a comparison between the output in the 3rd quarter of 1915 and a similar period in 1918.

| | 1915 (3rd Qr.) | 1918 (3rd Qr.) |
|---------------------------------------|-------------------|-------------------|
| Guns: | | |
| Light | 500 | 1,940 |
| Medium | 195 | 437 |
| Heavy | 20 | 678 |
| Machine Guns | 1,719 | 33,507 |
| Rifles | 176,230 | 287,755 |
| Aeroplanes | 707 | 8,503 |
| Aeroplane Engines | 458 | 7,628 |
| Ammunition (artillery rounds) | 2,083,000 | 15,780,000 |
| " (small arm rounds) | 368,500,000 | 746,000,000 |
| Propellants (tons) | 10,470 | 43,691 |
| High Explosives (tons) | 3,309 | 15,816 |

The total expenditure of the ministry from the commencement to 1919-20 was £2,019,507,941.

The work in the United Kingdom was helped by other parts of the Empire. Canada in particular rivalled the efforts of its troops in the field by the work of its munition factories. In four years these produced 60,000,000 shells, and 100,000,000 lb. of high grade explosives, 350,000 people being employed in the Dominion producing war material, and in the latter half of 1917 15 p.c. of the total expenditure of the ministry went there.

The U.S.A. produced munitions of all kinds for the Allies in gigantic quantities. The Dupont powder works claimed at one time that they made 45 p.c. of the high explosives used by the Allied armies. When the U.S.A. entered the war in 1917 this production was nationalised and systematised. See The Great Munition Feat, 1914-18, G. A. B. Dewar, 1921.

Munitions, MINISTRY OF. Government department established June 9, 1915, to expedite and control the production of munitions of war. It continued in existence until Mar. 31, 1921. The minister—the first appointed being Dr. Lloyd George—ranked as a secretary of State, was a member of the cabinet, and received a salary of £5,000 a year. He was assisted by

| | |
|---------------------------------|-------------|
| Rifles | 3,954,200 |
| Aeroplanes | 52,000 |
| Ammunition (Gun rounds) | 102,553,800 |

a parliamentary secretary and a large paid staff, and also in an unpaid capacity by a number of business men. The department attained an enormous size, and several large buildings in London, including the Hotel Metropole, were taken over to house it. Its chief departments were concerned with the supply of labour to factories, and the output of munitions and explosives. It had also a trench warfare supply department and an inventions department. Its inspectors supervised "controlled establishments" set up all over the country. There was a department with similar duties in France.

Munkacevo. Town of Czechoslovakia in the autonomous dist. of Ruthenia, formerly known as Munkacs. It is on the Latorca at the edge of the Forest Carpathians, on the rly. route from Budapest to Lemberg through the Beskid Pass. The fortress on a rock near the town was besieged many times. Nearly half the inhabitants are Jews. There is a trade in timber, grain, and cattle. Near the fort was erected in 1896 a millennial monument commemorating the first Magyar encampment in Hungary. Pop. 17,000.

Munkacsy, MICHAEL (1844-1900). Hungarian painter. Born at Munkacevo, his real name was



Michael Munkacsy,
Hungarian painter

Lieb, and his youth was spent in extreme poverty. He studied at the Art Society in Pest and later made his way to Vienna, Munich, and Düsseldorf, where he painted *The Last Days of a Condemned Prisoner*, which was greatly admired. In 1872 he settled in Paris, where his picture *Milton Dictating Paradise Lost* won a medal in 1878. After a brilliant career he became insane and died at Endenich, Germany, May 1, 1900. He is best known by his immense religious pictures, *Christ before Pilate*, and *the Crucifixion*, sold for more than £30,000 each, and by his *Ecce Homo*. Other notable works are *The Apotheosis of the Renaissance*, for the ceiling of the Austrian Art Historical Museum, Vienna, 1884; and *The Two Families*. *Pron.* Moonkachy.

Munku Sárdyk. Sacred mountain of N. Mongolia. It is 7 m. N. of Kossogol, and from its glaciers rise the Oka, Irkut and Ulu-kem, one of the head streams of the Yenisei. It was first ascended by Radde in 1859. Graphite is found near by. Alt. 11,500 ft.

Munro, HECTOR HUGH (1870-1916). British novelist. Born in Burma, son of Col. C. A. Munro, he was educated at Exmouth and Bedford, and joined the Burma Mounted Police, but retired on grounds of health. About 1890 he began contributing



Hector H. Munro,
British novelist
Hoppé



Munkacevo, Czechoslovakia. The castle, founded in the 14th century, and the scene of many sieges

to *The Westminster Gazette*, sketches over the pen-name Saki, and won notice by his political satires in an *Alice in Wonderland* setting. He acted as war correspondent in the Balkans, and as St. Petersburg and Paris correspondent 1902-8. Shortly after the Great War broke out he joined the army, and fell in action, a lance-sergeant in the 22nd Royal Fusiliers, Nov. 14, 1916, at Mailly, near Beaumont-Hamel. He won a high place as a writer of the short story, his work in this form having something of the neat artistry associated with the French *conte*. His works included *The Rise of the Russian Empire*, 1900; and *The Toys of Peace*, with a memoir by R. Reynolds, 1919.

Munro, HUGH ANDREW JOHN-STONE (1819-85). British scholar. Born at Elgin, Oct. 19, 1819, he was educated at Shrewsbury School, and Trinity College, Cambridge. Having proved himself a brilliant classical scholar, he became fellow and lecturer at Trinity College, and was, 1869-72, professor of Latin in the university. He died in Rome, March 30, 1885. Munro's high reputation rests on his edition and translation of *Lucretius*, 1860-64, regarded as one of the finest modern examples of classical scholarship. He also wrote *Criticisms and Elucidations of Catullus*, 1878, and verses and translations in Greek and Latin.

Munro, NEIL (b. 1864). Scottish novelist. Born at Inverary, June 3, 1864, he engaged in journalism, and attracted wide attention by his stories, *The Lost Pibroch*, 1896. Among his other tales and novels, which deal for the most part with Scottish life, especially in the West Highlands, are *John Splendid*, 1898; *Gilian the Dreamer*, 1899; *Doom Castle*, 1901; *The Daft Days*, 1907; *Fancy Farm*, 1910; and *The New Road*, 1914, a tale of General Wade's men after the '45. He became editor of *The Glasgow*

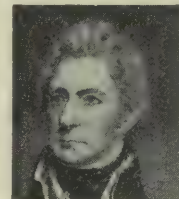
Evening News in 1918. Under the pseudonym of Hugh Foulis he published humorous studies of West of Scotland character. He wrote the article on Sir Walter Scott for this *Encyclopædia*. See *Port. Gallery of Contributors*.

Munro, ROBERT (1835-1920). Scottish archaeologist. Born in Ross-shire, July 21,

1835, he studied in Edinburgh, and practised medicine at Kilmarnock until 1886. Thereafter he served as secretary to the Society of Antiquaries of Scotland, 1888-99, and devoted himself especially to the study of the European stone age. His numerous works include *The Lake-Dwellings of Europe*, 1890; *Prehistoric Scotland*, 1899; *Palaeolithic Man and Terramara Settlements*, 1912; *Prehistoric Britain*, 1914. He died at Largs, July 18, 1920.

Munro, ROBERT (b. 1868). British politician. Born May 28, 1868, the son of a minister of the Free Church of Scotland, he was educated at Edinburgh University, and became an advocate. He served as counsel to the inland revenue, and in 1910 entered the House of Commons as Liberal M.P. for the Wick Burghs. In 1913 he was made lord advocate, and in 1916 secretary for Scotland. In Oct., 1922, he became Lord Justice Clerk, taking the title Lord Alness.

Munro, SIR THOMAS (1761-1827). British soldier and administrator. Born May 27, 1761, the son



Sir Thomas Munro,
British soldier
After M. A. Shee, R.A.

of a Glasgow merchant, he entered the service of the East India Company as an infantry cadet in 1780, participating at once in the operations against Haider Ali. He was engaged in civil administration 1792-99, and then served against Tipoo Sahib. Later he was appointed administrator of Kanara. Returning home in 1807, he went out again to Madras in 1814 on a mission of administrative reform, but his work being interrupted by a fresh *Mahratta* war he defeated the Peshwa in a brilliant campaign. From 1819 until his death from cholera, July 6, 1827, he was governor of Madras.

Munsey, FRANK ANDREW (b. 1854). American publisher. Born at Mercer, Minnesota, Aug. 21, 1854, he had some experience as a telegraphist in Augusta, Maine, and then went to New York, where in 1882 he founded *The Golden Argosy*, an 8-page weekly illustrated paper for boys and girls, later known as *The Argosy*. *Munsey's Weekly*, a periodical for adults, started by him in 1889, became a monthly. *Munsey's Magazine*, Oct., 1891. Owner of *The New York Sun* and *The Baltimore News*, *The All-Story Magazine*, *The Scrap Book*, and other publications, he was author of *Afloat in a Great City*, 1887; *The Boy Broker*, 1888; *A Tragedy of Errors*, 1889; *Under Fire*, 1890; and *Derrington*, 1894. See *The Founding of the Munsey Publishing House*, F. A. Munsey, privately printed, 1907.

Munster. One of the four provinces of Ireland. It consists of the six counties lying in the S.W. of the country, Clare, Kerry, Cork, Tipperary, Limerick, and Waterford. Its area is 9,320 sq. m., making it the largest of the four. A mountainous region, it contains some of the



Munster arms

wildest and also the most beautiful parts of Ireland. Munster was one of the old Irish kingdoms, and was at one time divided into Thomond, the N. part, and Desmond, the S. part. Its independent kings existed until the conquest by the English in the 12th century, and the title remained much longer. In the reign of Elizabeth a president was appointed to govern Munster, which about this time was divided into counties. See Ireland; Thomond.

Munster. Town of Alsace, France. It stands beneath the Vosges, where two small streams unite, 11 m. from Colmar. It has some textile industries, and the buildings include a Romanesque church and a theatre. A Benedictine abbey, founded in the 7th century, was the nucleus of the town, which was made a free imperial city in the 13th century. In the 17th century it passed with Alsace to France; from 1871-1919 it was German, being restored to France after the Great War. The fertile valley of Munster, through which the river Fecht flows, is noted for its cheese. Pop. 6,000.

Münster. Town of Westphalia, Germany. It is 78 m. N.N.E. of Cologne on the Aa and the Dort-

mund-Ems canal. The 13th century cathedral, the 14th century Gothic churches of S. Lambert and Our Lady, and the old monastery of S. Ludger are the chief ecclesiastical buildings. The peace of Westphalia was signed in 1648 in the Friedenssaal (peace chamber) in the 14th century Gothic town hall. The castle, formerly the residence of the prince bishop, is now used for administrative offices. The town has quaint gabled houses, arcades and irregular streets. The old fortifications have been rased and turned into promenades. The university, founded in 1771, was reorganized in 1902. Westphalian hams and pumpernickel, linen and cotton textiles, paper and leather goods, beer and spirits are the principal articles of manufacture.

The bishopric was founded by Charlemagne in 791. The bishops became princes of the empire in the 12th century, and Munster afterwards joined the Hanseatic League. John of Leiden, the Anabaptist leader, set up here the kingdom of Zion, which was suppressed in 1535, the bodies of the leaders being



exposed in three iron cages attached to S. Lambert's in 1536. The lands of the bishopric were secularised in 1803 and divided in 1814 between Prussia, Hanover, and Oldenburg. Pop. 90,000.

Munster, EARL OF. British title borne since 1831 by the family of Fitzclarence. The first earl was George, a son of the

duke of Clarence, afterwards William IV, by Mrs. Jordan, the actress. Created earl after his father's accession, he was succeeded in 1842 by his son, and the present earl is his direct descendant.

Münsterberg. Town of Germany, in Silesia. It is 37 m. S. of Breslau on the Ohlau, and was once the capital of a principality of the same name. There are breweries and manufactures of bricks and other clay products. Pop. 9,000.

Münsterberg, HUGO (1863-1916). German psychologist. Born at Danzig, he was educated there and at Leipzig and Heidelberg. In 1891 he became professor at Freiburg, but in 1892 he settled in America as professor of psychology and director of the psychological laboratory at Harvard.



Hugo Münsterberg, German psychologist

In 1911 he was made director of the American Institute in Berlin, where he died, Dec. 15, 1916. Münsterberg upheld the theory of voluntaristic idealism, according to which the will is the essential principle, as opposed to intellectualism, which regards the intellect as supreme and knowledge as derived from pure reason. His chief works are *Principles of Psychology*, 1914, and *Psychology, General and Applied*, 1914.

Munster Fusiliers, ROYAL. Regiment of the British army. It is a union of the old 101st and 104th Foot, and originated in India in 1652 as a small force employed by the East India Company. In 1756 it became the Bengal European

Battalion, and as such fought under Clive at Plassey and elsewhere. Constant active service in India followed—Buxar, two Rohilla Wars, Masulipatam, and Carnatic being a few of the names. In 1838 it was in Afghanistan, and in 1846 fought against the Sikhs. In the same year



Münster, Westphalia. Gothic church of Our Lady. Top, left, 14th century Town Hall

it received the name of the Bengal Fusiliers, and in 1848 served in the Punjab.

After fighting in Burma the Fusiliers took part in suppressing the Indian Mutiny, during which they



Munster Fusiliers' badge

earned six Victoria Crosses, and the nickname of the "dirty shirts," because on one occasion they turned out to fight in their shirt sleeves. In 1861, after the dissolution of the East

India Company, they were added to the British Army as the 101st and 104th Bengal Fusiliers. Ten years later they came to England, and in 1873 they were first associated with Ireland. In 1881 they received their present name. In 1885-87 the Munsters served in Burma, and, like the other Irish regiments, gained renown in the South African War.

In the Great War, the 2nd battalion formed part of the expeditionary force, and as part of the 1st infantry brigade was involved in the fighting around Mons and during the retreat. It later joined the 3rd brigade and participated in most of the other battles in the latter part of 1914, and in the fighting at Givenchy in Jan., 1915. The 1st battalion formed part of the 29th division which won fame in Gallipoli in 1915, and made the landing at Beach V. The 1st and 2nd battalions were engaged in the battle of the Somme, 1916, in which year the 6th bore a notable share in the British effort in the expedition to Salonica. In 1917 the 1st battalion fought at Messines and Cambrai. The 2nd battalion made a stand near Ronsoy during the German offensive in the spring of 1918; the 1st was also engaged in the fierce fighting of that year, helping the Canadians to capture the Drocourt-Quéant line in Sept., and sharing in later British attacks. The regimental depôt is at Tralee.

Muntjac (*Cervulus*). Species of small deer. It is found in S. and E. India, usually in the forests and jungles. The upper canine teeth in the male project beyond the lips as tusks and can be used as weapons. The antlers grow from pedicles of bone forming prolongations of the frontal bone. The female has neither the tusk-like canines nor antlers.

Muntz Metal. Alloy of copper and zinc. It admits of being forged and is much used for sheathing, bolts and nuts, pump rods and other parts of machinery which are to be exposed to the

action of sea water or other influences calculated to corrode iron or steel. It was brought into use by George Frederick Muntz of Birmingham in 1832. See Alloy; Brass.

Münzer, THOMAS (1490-1525). German sectarian and revolutionary. A native of Stolberg in the Harz, he joined the reformers, but in 1521 advocated extreme doctrines, and demanded obedience as an inspired prophet. He is sometimes considered the founder of the Anabaptists. Having planned the murder of his opponents at Zwickau, he fled to Prague, where the Taborite principles still lingered, and then appeared at Wittenberg, where he found influential support until Luther arrived and restored order. Münzer retired to Allstedt in Thuringia and set up a communistic theocracy. Expelled in July, 1524, he took a leading part in the Thuringian peasant revolt. His camp at Frankenhausen was taken by Philip of Hesse and John, elector of Saxony, May 15, 1525, and Münzer was executed. See Anabaptists; Peasants' War; Reformation.

Mur. River of Austria and Yugo-Slavia. It rises in the Eastern Alps in Salzburg, Austria, and flows through Styria past Graz, where its valley is a valuable line of communication on the routes to Vienna from the S. and S.W. Below Radkersburg it enters Yugo-Slavia and joins the Drave, of which it is the principal affluent.

Murad I (1319-89). Sultan of Turkey. Succeeding his father Orkhan in 1359, he conceived the ambition of establishing his empire in Europe, and, favoured by the disorders in the Balkan countries, began his advance. Capturing Adrianople and defeating the kings of Hungary, 1363, and Serbia, 1366, he established his realm as

far as Sofia in 1382. The subjugated princes eventually formed an alliance under Lazar, tsar of Serbia, and marched against the Turks, but were defeated at Kossovo, 1389, by Murad, who did not, however, live to reap the fruits of his victory, being assassinated by a Serbian soon after the battle.

Murad II (c. 1403-51). Sultan of Turkey. Son of Mohammed I, he succeeded to the throne in 1421,



Murad II, Sultan of Turkey

but a series of unsuccessful wars with the Hungarians under Janos Hunyadi led to the treaty of Szegedin in 1444. By this Murad abandoned his sovereignty over Serbia. He twice abdicated in favour of his son, Mohammed, but each time was recalled to the throne by foreign menace. His campaigns against the Hungarians ended with the victory over Hunyadi at Kossovo, 1448, and he died at Adrianople three years later.

Murad III (1546-95).

Sultan of Turkey. Succeeding his father, Selim II, in 1574, his indolence and sensuality made his reign a continual struggle with the janissaries. The first English ambassador was accredited to the Porte in 1583.



Murad III, Sultan of Turkey

The first English ambassador was accredited to the Porte in 1583.

Murad IV (1611-40). Sultan of Turkey. Ascending the throne in 1623, his minority was the opportunity for grave disorders through-

out his realm, which culminated in an attack on the palace at Constantinople, 1631. Naturally of a stern and imperious character, Murad soon earned a reputation for unparalleled ferocity, putting to death during the last eight years of his reign at least 100,000 persons. After a successful campaign against the Persians in 1638-39, he died, early in 1640, of gout, due to drunkenness



Muntjac. Small deer found in S. and E. India showing growing antlers, which exist only in the male of the species

Murad V (1840-1904). Sultan of Turkey. Born Sept. 21, 1840, the eldest son of Abdul Mejid, his whole life, with the exception of a brief interval, was spent as a prisoner, first of his uncle the usurper, Abdul Aziz, and then of his brother, Abdul Hamid II. In 1876 he was proclaimed sultan on the fall of Abdul Aziz, but after three months he was himself deposed in favour of his brother, whose prisoner he remained until his death, Aug. 29, 1904.

Muraena. Genus of large fish, resembling the eel. It occurs mainly in the tropic seas, though *M. helena*, one of the 80 odd species, is found in the Mediterranean. Some of the species are 10 ft. long, and their strong and sharp teeth make them dangerous to fishermen. Most of them are handsomely coloured and marked, and they have been esteemed as table fish since classic times.

Mural Circle. In astronomy, name given to an instrument formerly used for measuring the declinations of stars. It consisted of a graduated circle on firm foundations, and carrying a telescope which revolved in the meridian plane. It was superseded by the transit circle (*q.v.*).

Mural Decoration. Artistic adornment of wall surfaces with conventional or pictorial designs, either flat or in relief, or with materials decorative in themselves. While mural decoration is subsidiary to architecture, and takes different forms appropriate to the different styles of building, it consists in the application of many other arts, especially painting, sculpture, ceramic, and textile art.

Painting on a flat plaster surface is the most widely diffused method, and is applied, where the climate permits, to exterior as well as interior decoration. Tempera and fresco were generally used by the ancients. The Egyptians employed brilliant and somewhat crude colours. The Cretans decorated their palaces with delicate naturalistic frescoes from 2000-1400 B.C. In the classical age of Greece, colour was freely applied to walls, but our knowledge of ancient mural painting is mainly derived from derivative or late styles, Etruscan and Roman, especially the art of Pompeii. Gothic architecture, though providing relatively little flat wall surface, was accompanied by a revival of wall-painting, greatly developed at the Renaissance. Modern attempts at the revival of fresco painting have been sporadic, and not very fortunate.

The use of sculpture for mural

decoration dates from remote antiquity. The Egyptians covered their walls with painted bas-reliefs, often countersunk. The alabaster carvings in very low relief in Assyrian palaces are marvels of technique. In Greece reliefs were sparingly used, chiefly in friezes. Late Gothic employs diaper patterns, and the walls of Moslem buildings are often adorned with sculptured arabesques.

A frequent method in all ages from the Aegean civilization of Crete, through the classical, Mahomedan, and Renaissance styles, has been the application of stucco, gesso, or other kinds of plaster, to form designs in relief on a flat surface. It is often combined with painting and gilding. The Alhambra and other Moorish buildings owe much of their beauty to coloured stucco.

From the glazed brick of ancient Persia was ultimately derived the magnificent Oriental art of covering walls with moulded and enamelled tiles, in which geometrical designs, flower patterns, and Arabic texts are employed. In the Renaissance age, Italian faience and terra cotta were extensively used in mural decoration.

Woven hangings were used from early times, but tapestry is a characteristic art of the Renaissance. Rich effects were produced in the 16th and 17th centuries by stamped leather, silvered and covered with yellow varnish. Painted and printed cloth were cheap substitutes for tapestry. Oak panelling, often richly carved with foliage and fruit, was frequent in Tudor and Stuart England. Wallpaper gradually came into use in the 18th century, and was raised to a fine art by William Morris and others a century later. See Encaustic; Faience; Fresco; Gesso; Glaze; Mosaic; Painting; Panelling; Plaster; Rococo; Sculpture; Sgraffito; Stucco; Tapestry; Tempera; Terra Cotta; Tiles; Wallpaper; Wood-carving.

Murano. Island and town in the Venetian lagoon, Italy. It is 1½ m. N.E. of Venice, forming a suburb of that city. The island, 5 m. in circuit, once thickly populated and possessing its own mint, is now largely occupied by vineyards. It has a cathedral dating from about 970, since rebuilt and

restored, and other churches with valuable pictures. The museum is rich in examples of glass-work, for which Murano has been celebrated from the 13th century. Introduced by Byzantine glass-workers during the Crusades, the industry declined during the 18th century, but was revived in the 19th. Pop. 5,800.

Murat, JOACHIM, KING OF NAPLES (1767-1815). French soldier. Born March 25, 1767, at



After Gérard

La Bastide, S. France, the son of an innkeeper, in 1787 he enlisted in a cavalry regiment, and obtained a commission in 1792. Three years later he attracted the attention of Napoleon, and accompanied him to Italy, where in recognition of his services he was made general. Accompanying Napoleon to Egypt, he distinguished himself at the battle of the Pyramids, 1798, and was given command of the cavalry in the Syrian campaign, being largely responsible for the victory of



Murano, Italy. Rio dei Vetrai, the principal canal of the Venetian island

Abukir. Returning to France, he was active in promoting the consulate, and in 1800 married Caroline Bonaparte, the consul's youngest sister. The same year he crossed the Alps with Napoleon, fought at Marengo, and the following year was given command of the army of Italy. In 1803 he was made governor of Paris.

Upon the establishment of the empire, Murat was made prince of the empire, marshal, and grand admiral of France. The campaign of 1805 found him in command of the cavalry, and as a reward for a series of successes, culminating at Austerlitz, he was, in 1806, made grand duke of Berg. Later in the year, he took up his old command, and fought with distinction at Jena, Hohenlinden, Eylau, and Friedland. In 1808 he was sent to Spain as lieutenant-general of the emperor, but after two months, upon Joseph Bonaparte becoming king of Spain, Murat was made king of Naples, under the name of Joachim Napoleon. The position, however, was so intolerable that it led to serious differences with the emperor. The war with Russia, however, brought Murat to Napoleon's side, and he was given command of the cavalry in the campaign of 1812, where he took part in every action of importance. When, after Moscow, Napoleon hastened back to Paris, he left Murat in command of the retreating army.

Murat's fears for his throne were increased after the Leipzig campaign, and he hurried to Naples and entered into negotiations with Austria. Allying himself to that empire, he attacked the French in N. Italy, but on Napoleon's escape from Elba, he offered his service to his old master, and declared war on Austria. Marching N. he was severely defeated, his army was routed, and he fled to Naples, and thence to Cannes, where he organized an expedition against the Bourbons, who had been reinstated in Naples. With 200 men he landed in Calabria, at Pizzo, where he himself was taken prisoner. He was tried on the spot by court martial and on Oct. 13, 1815, was shot in the courtyard of the castle at Pizzo.

Bibliography. Murat, J. Chavannon and G. Saint-Yves, 1905; Napoléon et le Roi Murat, A. Espitalier, 1910; J. Murat, A. H. Atteridge, 1911.

Muratori, Lodovico Antonio (1672-1750). Italian scholar. Born near Modena, Oct. 21, 1672, he became librarian at Milan, and in 1700 was appointed librarian and archivist to the duke of Modena.

The many volumes of Italian historical materials which he collected and edited are his imperishable



L. A. Muratori,
Italian scholar

monument: they comprise nearly 50 volumes: *Rerum Italicarum Scriptores*, 1723-51; *Antiquitates Italicae Medii Aevi*, 1738-42; and *Annali d'Italia*, 1744-49, the second book of which contains the second century canon of the N.T. books known as the Muratorian Fragment. His principal original work was *Della Perfeita Poesia Italiana*, 1706. Muratori died at Modena, Jan. 23, 1750.

Muraviev, Mikhail Nikolaevich, Count (1845-1900). Russian statesman. Born April 19,

1845, he was educated at Heidelberg, and entered the foreign office, 1864. After diplomatic service in various European capitals, he became foreign minister in 1897, and issued the Tsar's suggestion for a peace conference at the Hague, 1898. He died June 21, 1900.

Murchison. (1) River of Western Australia. It rises in the Carnarvon Range and flows S.W. to Cantheaume Bay.

(2) Goldfield of Western Australia, E. and S.E. of the Sanford, a left bank affluent of the Murchison. Cue, its capital, is connected by rly. with Geraldton.

(3) Mt. of Western Australia, 1,705 ft. It is situated in the Scrubby Range, E. of the Middle Murchison.

(4) Co. of Western Australia, with a coast line at the S. end of Shark Bay, and the river Murchison as its E. boundary.

Murchison, Sir Roderick Impey (1792-1871). British geologist. Born at Tarradale, Ross-shire, Feb. 19, 1792, he was educated at the



Sir R. Murchison,
British geologist

military college at Great Marlow, and, entering the army, served in the Peninsular War. In 1826 he was elected F.R.S. and in 1828 he toured Au-

vergne and N.

Italy with Sir Charles Lyell, and afterwards carried out a number of geological tours both in the United Kingdom and on the Continent. He re-classified the Palaeozoic rocks and in 1835 suggested the name Silurian. In 1838 he published his famous work *The Silurian System*. In 1855 he was appointed director-general of Geological Survey, and was president of the Geographical Society for many years. He was knighted in 1846, made a K.C.B. in 1863, and a baronet in 1866. He died Oct. 22, 1871. See *Silurian*; consult also *Life*, 2 vols., Sir A. Geikie, 1875.

Murchison Falls. Waterfall on the White Nile. It is 50 m. below Foweira, where the river drops in three cascades to the level of Lake Albert.

Murchisonite. Mineral belonging to the orthoclase group of rocks. Found at Heavitree, near Exeter, and named after Sir R. I. Murchison, it has the opalescent reflections typical of many stones of this group. See *Orthoclase*.

Murcia. Maritime prov. of S.E. Spain. Between Alicante and Almería, on the Mediterranean Sea, its area is 4,453 sq. m. It slopes from the mountains in the N.W., which rise in the Sierra de Espuña to an alt. of 5,150 ft., down to the sea. In the coast land to the E. is a large lagoon, called the Mar Menor. Well watered by the Segura and its tributaries, it is fertile, especially in the Huerta de Murcia, where irrigation is practiced. The climate is hot and dry; oranges, olives, vines, maize, and other cereals are grown, and mulberry trees cultivated for the rearing of silkworms. The chief towns are Murcia, the capital, and Cartagena. The first Carthaginian possession in Spain, Murcia was in turn occupied by the Romans, the Moors, who made of it a kingdom, and the Spaniards. The old Moorish kingdom, 1223-43, corresponded chiefly with the modern provs. of Murcia and Albacete. Pop. 633,000.

Murcia (Arab. Medinat Mursiya). City of Spain, capital of the prov. of Murcia. It stands on the Segura, river, 25 m. W. of the Mediterranean, and 50 m. by rly. N.N.W. of Cartagena. In the centre of the beautiful Huerta (garden) de Murcia, the older parts are crowded, but the new are well built, with fine streets, avenues, and squares. The cathedral, founded probably in 1388, has a Renaissance façade and a tower 480 ft. in height. The bishop's palace is notable, and there is a Moorish granary, now a picture gallery. There is a large trade in fruit. An Iberian town and

a Roman colony occupied the site, but the present city was founded by Abd-ur-Rahman II, Caliph of Cordova, in 825, afterwards belonged to various Moorish states, and was taken by the Castilians, 1263. It was besieged by the French in 1810 and 1812, and has suffered from both inundations and earthquake. Pop. 133,000.

Murder. In English law, the unlawful killing of any human being who is in being and under the King's Peace, with malice aforethought, either express or implied. The words "in being" have relation to the slaying of children at the time of birth. Unless the child had a separate existence from its mother, its death cannot be made the subject of a charge of murder. "Unlawful" killing means killing without legal justification, as, for example, is possessed by a person who slays someone who is trying to kill him; by the public executioner; by a constable who slays a rioter. "Malice aforethought either express or implied" does not necessarily mean actual ill-will. It is rather clumsily said that if there is no lawful excuse for the slaying, or if it was not accidental, or if it was not upon provocation in hot blood, malice will be implied.

Further, there is what is sometimes popularly called "constructive murder," which happens when a man who had no intention to kill does kill when he is in process of doing another felonious act. A burglar, being interrupted, punches the interrupter, who falls down and happens to strike his head on the fender, and dies. The burglar is guilty of murder. Death must take place within a year and a day of the wounding for a murder charge to be brought in England. With

certain exceptions the body must be found in a case of murder before the accused can be tried. By English law the judge who tries an alleged murderer must, if there is a conviction, pronounce sentence of death. See Homicide; Manslaughter; Matron.

Murdock, WILLIAM (1754-1839). British inventor. Born at Bellow Mill, Ayrshire, Aug. 21, 1754, he became an assistant to James Watt, 1777, carrying out many of the latter's engineering schemes. In 1792 he turned his attention to the possibility of using coal-gas or the

gases from the distillation of wood, peat, etc., for illuminating purposes. He erected an experimental plant in 1792, but it was not until 1802 that the Soho factory of James Watt



William Murdock,
British inventor
After Graham Gilbert

was lighted by gas, the first public use of the new illuminant. He died Nov. 15, 1839.

Murexide OR **ACID AMMONIUM PURPURATE.** Substance which crystallises in prisms, showing a beautiful metallic green lustre. It was formerly used in dyeing, but has now been replaced by aniline colours. Murexide was formerly made in large quantities from guano, and can be made by acting on a solution of alloxan and alloxantin by means of ammonia. Also known as Roman purple, it was similar to the Tyrian purple of the ancients. The latter dye was obtained from a genus of gastropods, Murex, which gave the name to the former.

Murfreesboro. City of Tennessee, U.S.A., the co. seat of Rutherford co. Situated in a fertile plain, near the Stone river, 33 m. S.E. of Nashville, it is served by the Nashville, Chattanooga, and St. Louis Rly. Manufactures include machine-shop products, lumber, carriages, and flour. The battle of Stone River or Murfreesboro, 1863, took place about 2 m. from the city. Settled in 1811, Murfreesboro was incorporated in 1817, and for six years from 1819 was the state capital. Pop. 5,400.

Murger, HENRI (1822-61). French novelist. Born in Paris, March 24, 1822, he was of German origin. In his youth he passed from one occupation to another, including journalism, until he became famous in 1848 with his *Scènes de la Vie de Bohème*. In this he describes with rich humour and



Henri Murger. French novelist,
author of *Scènes de la Vie de Bohème*
From a sketch by Gavarni

poignant pathos the literary and artistic underworld of Paris, in which much of his own life was spent. He contributed to the *Revue des deux Mondes* and wrote other novels, including *Les Buteurs d'Eau* and *Le Sabot Rouge*, also poems and plays. His *Vie de Bohème* was dramatised with success, and some of his verses are in A. Lang's *Ballads and Lyrics of Old France*, 1872. He died Jan. 28, 1861. See Lives, A. Delvan, 1866; Ricault d'Héricault, 1896.

Murghab. River of Central Asia. It rises in Afghanistan, enters Russian territory, and, after flowing through the oases of Penjeh and Merv, loses itself in the sandy desert of Kara-Kum. Its length is about 400 m. It is crossed by a branch of the Central Asiatic Rly.

Muridae. Zoological name for the mouse family of the great order of rodents. It includes the rats, mice, voles, hamsters, lemmings, and certain others. They are distributed all over the world, and most of them have naked, scaly tails. Most of them live upon land, though a few are aquatic in habit. See Hamster; Lemming; Mouse; Rat; Rodent; Vole, etc.

Murillo, BARTOLOMÉ ESTEBAN (1617-82). Spanish painter. Born at Seville, Dec. 31, 1617, he was related to the painter Juan del Castillo, to whose care and instruction he was committed. On Castillo's removal to Cadiz, Murillo was compelled to join the numerous street artists who hawked their wares at the weekly fair in Seville. In 1642 he was impressed by the work of Pedro de Moya, just returned from England, and resolved to travel for his own education. He obtained the necessary money by selling a number of coarsely executed but popular subjects to the merchants who exported these goods to



Murcia, Spain. Cathedral tower,
completed in 1766, with, left, the
16th century Chapel de los Veles

Spanish America, and took the road to Madrid, where he was kindly received by Velasquez, then at the height of his fame, who introduced him to his patron, Count Olivarez.

Having returned to Seville, he was commissioned by the friars of the Franciscan convent to paint a series of 11 pictures for their cloister, and began this work in 1646. The payment was beggarly, but the paintings brought fame and commissions. In 1648 he married a rich and noble wife, Doña Beatriz de Cabrera y Sotomayor. In 1654, on the death of Pacheco, he was acknowledged as the head of the Sevillian school. A series of paintings esteemed among his most celebrated works was begun in 1671 for the church of the Hospital of La Caridad; and three years later he began a famous series for the Franciscan convent outside Seville. These included the Charity of S. Thomas of Villanueva, which he was wont to speak of as "his picture." He died at Seville, April 3, 1682.

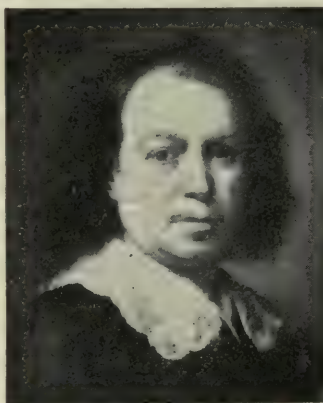
Murillo excelled in genre, and his realistic scenes from low life are preferred by many to his religious pictures, which are sometimes spoilt by false sentiment and lack of dignity. In the sack of Seville, Marshal Soult carried off a number of Murillo's works, several of which remain in France. There are examples in the London National Gallery, the Dulwich Gallery, the Wallace Collection and British private collections. See Andrew; Annunciation; Dice; consult also Velasquez and Murillo, C. B. Curtis, 1883; Lives, G. C. Williamson, 1902; A. F. Calvert, 1908.

Murman OR **MOURMAN**. Name of the N. coast of the Kola Peninsula, and sometimes given to the whole peninsula. A wild and inhospitable region, it stretches from the Kola Inlet, on the N.W., to the W. side of the mouth of the White Sea, Arctic Ocean, on the S.E., and is about 200 m. in length. The town of Murmansk, at the head of the Kola Inlet, came into existence in 1915 as the Arctic terminus of the Murman Rly.

Murman Expedition. During the Great War the Allies and America determined in the spring of 1918 to protect and occupy part of the Murman Rly. This region was menaced by Finland, at that time a vassal of Germany, who had bargained with the already sympathetic Bolshevik government for an enlargement of Finnish territory by the inclusion of the Murman coast, Kola Peninsula, and a considerable extent of the country through which the rly. ran south to Petrograd.

In Feb.-March, 1918, the British effected a naval landing at Murmansk, and at Pechenga, about 100 m. farther W. and close to the Finnish frontier. But it was not till June that British, French, and American troops, in considerable numbers, occupied the port of Murmansk and the adjacent country, including Alexandrovsk, the landing point of the cable from Peterhead, Scotland. The Murman regional soviet at the outset not only offered no

opposition, but co-operated with the Allies for the defence of the rly. and territory. On their side, the Allies agreed to recognize the local soviet

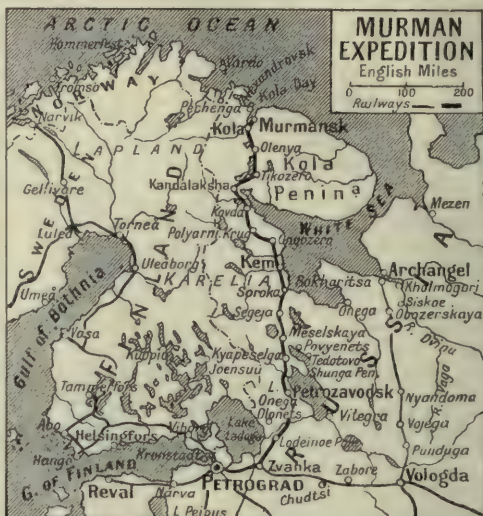


Self-portrait in the possession of Earl Spencer

Murillo

as the supreme authority, undertook not to interfere politically, and promised to provide food. These terms were embodied in an agreement, ratified July 7, 1918, apparently with the approval even of the Bolshevik government, but as the development proceeded of the German plans in Finland and elsewhere the Bolshevik government two weeks later changed its attitude, and ordered the local Soviet to support the Allies no longer.

The Murman Soviet, however, continued to support the Allies both in Murmansk and Archangel. In Aug. the main operations were in the latter area, but in Sept. the



Murman Expedition. Map of N.W. Russia and Finland, showing the area of operations of the expedition

Allies pushed down the Murman Rly., Kandalaksha becoming their base in Oct., and from that centre, in cooperation with the Karelians, they cleared N. Karelia of Bolsheviks and "White" Finns; later in the same month, having advanced S., and occupied Kem, they dislodged the enemy from the rest of Karelia. By the end of Jan., 1919, the Allies had advanced along the rly. S.W. of the White Sea, and early in March occupied Segeja, about 360 miles S. of Murmansk.

On April 11 the Allies routed the Bolsheviks at Urozero, and on May 18 they took Povenets, at the N. end of Lake Onega and more than 400 m. S. of Murmansk. In June-July fighting took place on the W. shore of Onega, the Bolsheviks being driven off. A British flotilla, aided by land and air forces, attacked the Bolshevik flotilla on Lake Onega, captured two steamers and took the port of Talvitski, as well as prisoners and guns, on Aug. 2, and towards the end of that month the Bolsheviks were defeated near Kyapeselga. In Sept., the Allies were threatening Petrozavodsk, the Bolshevik base on Onega. But by this time the evacuation of the Murman and Archangel areas was in process of being effected, and this led at the end of the month to a Bolshevik offensive up the rly. The British troops left the Murman area towards the end of 1919. See Archangel, Expedition to.

Murman Railway. Rly. starting from Murmansk, on the Kola Inlet, Arctic Ocean. It passes across the base of the Kola Peninsula to the N.W. corner of the

White Sea, skirts the W. side of that sea, and, after traversing a region of lakes and swamps, reaches the Petrograd-Vologda Rly. about 75 m. E. of Petrograd.

The building of the rly. had been contemplated as far back as 1895, but construction was not begun till 1915. Work was commenced from Zvanka N. and from Murmansk S. simultaneously, and not completed till 1917. See Kola.

Murner, THOMAS (1475-1537). German satirist and poet. He was born at Oberehnheim, Alsace, Dec. 24, 1475, became a Franciscan monk, and afterwards wandered from one university to another. His satire, of the most virulent kind, whether spoken or written, was largely directed against the upholders of the Reformation, although he wrote much himself of the need for reform within the Church. He was the most noted of the men who used the vernacular in a vain effort to beat back the tide of the new era. See Reformation.

Murom. Town of Central Russia. It is in the gov. of and 75 m. S.E. of Vladimir, on the Oka and the Kovrov-Murom rly. There is a trade in cereals, metals, timber, sugar, tea, and salt. Murom was an important commercial centre in the 10th cent. Pop. 19,000.

Murphysboro. City of Illinois, U.S.A., the co. seat of Jackson co. It stands on the Big Muddy river, 86 m. S.S.E. of St. Louis, and is served by the Illinois Central and other rlys. It manufactures boots and shoes, flour, and machine shop products. It was incorporated in 1867. Pop. 10,700.

Murray. River of Australia. It rises in the Australian Alps and forms the boundary between New South Wales and Victoria for 1,200 of its total length of 1,250 m. It flows into S. Australia, debouching through the shallow Lake Alexandrina. A large barrage scheme is planned to improve the lower reaches. Its basin comprises over 250,000 sq. m., the Darling-Lachlan-Murrumbidgee system forming its right bank tributaries, and the Goulburn, Campaspe, and Loddon its left. Navigable to Albury in good seasons, it is generally open to Echuca, 666 m. from the S. Australian border, for small craft.

Murray of Elibank, ALEXANDER WILLIAM CHARLES OLIPHANT MURRAY, BARON (1870-1920). British politician. Born April 12, 1870, the eldest son of the 1st Viscount Elibank, he was educated at Cheltenham College, and in 1900 was returned as Liberal M.P. for Midlothian, becoming comptroller of the household in 1905. In 1906

he was returned for Peebles and Selkirk, and in 1909 was appointed under-secretary for India. In 1910



Baron Murray of Elibank, British politician
Russell

was made a baron, becoming a partner in the contracting firm of S. Pearson & Son. He died Sept. 13, 1920. See Elibank.

Murray, SIR ARCHIBALD JAMES (b. 1860). British soldier. Born April 21, 1860, he was educated at

Cheltenham College and Sandhurst. He entered the Royal Inniskilling Fusiliers in 1879, and in 1900 became a lieutenant-colonel. Meanwhile he had served in Zululand and in South Africa. After five years on the staff at Aldershot, he was made director of military training in 1907, was inspector of infantry 1912-14, and in Aug., 1914, went to France as chief of the staff. In Oct., 1915, he returned to England to become the head of a reorganized imperial general staff, but was soon appointed to the command of the Mediterranean Expeditionary Force. He took over his new duties Jan. 9, 1916, and from Egypt led the British troops into Palestine, but returned home early in 1917 after the checks before Gaza. He held the Aldershot command, 1917-19. Knighted in 1911, he was promoted general in 1919. See Gaza; consult also his Despatches, 2 vols., 1920.

Murray, DAVID CHRISTIE (1847-1907). British novelist and journalist. Born at West Bromwich, April 13, 1847, he worked for a time in his father's printing office, served for a year in the 4th Dragoon Guards, and entered journalism as a reporter on The Birmingham



D. C. Murray, British novelist
Russell

Morning News. He played a lead in melodrama, wrote for The Daily News and The World, and was correspondent of The Times in the Russo-Turkish War. At a later period he was associated with The Morning and succeeded J. F. Nisbet as writer of The Handbook in The Referee. He was author of a number of popular novels, including A Life's Atonement, 1879; and Val Strange, 1883; an anecdotal volume, The Making of a Novelist, 1893; and some frank criticism in My Contemporaries in Fiction, 1897. He died at Hampstead, Aug. 1, 1907.

Murray, GEORGE GILBERT AIMÉ (b. 1866). British scholar. Born at Sydney, N.S.W., Jan. 2, 1866, he was educated at Merchant

Taylor's School and St. John's College, Oxford, and in 1888 became fellow of New College. Professor of Greek at Glasgow 1889-99, in 1908 he became regius professor of Greek at Oxford. Author of a History of Ancient Greek Literature, 1897; and Four Stages in Greek Religion, 1912, he is best known by his verse translations of Greek plays, produced for the most part at the Court Theatre, London, 1902-7.

Murray, who married a daughter of the 9th earl of Carlisle, associated himself with the movement for woman's suffrage, and with advanced liberalism generally. He wrote Liberalism and the Empire, 1900; and The Foreign Policy of Sir Edward Grey, 1915.

Murray, GEORGE HENRY (b. 1861). Canadian politician. Born at Grand Narrows, Nova Scotia, June 7, 1861, he was educated there and at Boston University, called to the Canadian bar in 1883,



G. H. Murray, Canadian politician

and became a Q.C. in 1895. Appointed in 1889 to the legislative council of Nova Scotia, he joined the government in 1891, under the Hon. W. S. Fielding, and in 1896, on the latter's resignation, was called upon to form an administration, himself taking the post of provincial secretary, and being elected by the county of Victoria. His government held office five times. See Nova Scotia.



G. G. A. Murray, British scholar
Russell

Murray, Sir George Herbert (b. 1849). British civil servant. Born Sept. 27, 1849, he was educated at Harrow and Christ Church, Oxford, and in 1873 entered the foreign office. In 1880 he was transferred to the treasury, where he was private secretary to W. E.



Sir George Murray,
British civil servant
Russell

Gladstone. Appointed chairman of the board of inland revenue, 1897, he was secretary to the post office 1899-1903, and permanent secretary to the treasury 1903-11. Murray then became a director of Armstrong, Whitworth & Co. In 1899 he was knighted, and in 1910 made a privy councillor. His son, Sir Evelyn Murray, was made secretary to the post office in 1914.

Murray, Sir James Augustus Henry (1837-1915). British lexicographer. Born at Denholm, Rox-



Sir J. A. H. Murray,
British lexicographer
Elliott & Fry

burghshire, he was educated at Edinburgh. From 1870-1885 he was a master at Mill Hill School, where the scheme for a new English dictionary, originally suggested by Archbishop

Trench, materialised. Murray undertook the preparation of a new English dictionary on historical principles, founded mainly on the materials collected by the Philological Society, as stated on the title-page of the first volume, published in 1888. The work had been begun at Mill Hill, but since 1885 was carried on at Oxford, where the Clarendon Press undertook its publication. He was knighted in 1908, and died at Oxford, July 26, 1915. See Memoir, H. Bradley, 1919.

Murray, Sir James Wolfe (1853-1919). British soldier. Born March 13, 1853, he joined the Royal Artillery in 1872, becoming captain in 1881. From 1884-90 he was in the intelligence branch, war office; held a staff appointment at Aldershot, 1894-97, serving in



Sir J. W. Murray,
British soldier
Russell

Ashanti in 1895. In 1898 he went to India, and in the S. African War served in Natal. Appointed to a brigade in India, he was later Q.M.G. at Simla, and in 1904 master-general of the ordnance at the war office. He was in India 1907-11, was general officer commanding in Scotland, and in S. Africa, March-Dec., 1914, and then became chief of the imperial general staff. He held the eastern command, 1916-17, and retired in 1918. Murray, who was knighted in 1900, died Oct. 17, 1919.

Murray, John. Name of a firm of British publishers. It was established at 32, Fleet Street

London, in 1768, by John Mac Murray (1745-93), a retired lieutenant of the Royal Marines, who, acquiring a bookselling business, dropped his Scottish prefix.

He issued the first two vols. of D'Israeli's *Curiosities of Literature*. His son, John Murray II (1778-1843), was London agent of Constable, had a share in Scott's *Marmion*, started *The Quarterly Review* in 1809, transferred the business in 1812 to 50 and 50a, Albemarle Street, and published for Byron, Borrow,



John Murray (IV),
British publisher
Russell

Crabbe, Jane Austen, and many others. John Murray III (1808-92) carried on the business, and on his death, April 2, 1892, was succeeded by John Murray IV (b. 1851), who was later joined by

his son, John Murray V. In 1917 the firm took over the business of Smith, Elder & Co. and *The Cornhill Magazine*. See *A Publisher and His Friends*, S. Smiles, 1891.

Murray, Sir John (1841-1914). British biologist and geographer. He was born at Coburg, Ontario, March 3, 1841, and educated at Stirling and Edinburgh. He was chief naturalist to the Challenger Expedition, 1872-76, and editor of its scientific reports, and also took part



John Murray (I),
British publisher

in other expeditions. He was the author of a number of books and memoirs on marine biology, oceanography, and limnology. He died March 16, 1914.

Murray, Lindley (1745-1826). American-English grammarian. Born in Pennsylvania, April 22, 1745, he was a successful barrister, and, having further amassed a fortune in business during the revolutionary war, he came over to England for his health, and settled at Holgate, near York. His English grammar had a large sale throughout Great Britain and the U.S.A. He died Jan. 16, 1826.



Lindley Murray,
American-English
grammarian

Murree. Hill station of India. in the Punjab, in the Rawalpindi district. It is situated in the N. of the district and is reached from Rawalpindi Cantonment by road (39 m.). It is on a spur of the Himalayas, alt. 7,517 ft., and is the summer headquarters of the Northern Army. Pop. 1,700.

Mürren. Pleasure resort of Switzerland, in the Bernese Oberland. It is perched on a mountain terrace below the Jungfrau, the Breithorn, the Blümlis Alp, and the Schilthorn, 3 m. by cable rly. and electric tramway S. of Lauterbrunnen (q.v.). Alt. 5,385 ft.

Murrey or **SANGUINE** (old Fr. *more*, mulberry-coloured). In heraldry, deep blood red colour. It is represented in drawing by diagonal lines crossing each other.

Murrumbidgee. River of New South Wales. It rises in the Australian Alps, flows N. in its upper course through the Federal Territory to the artificial lake caused by the Burrenjack dam, thence almost due W. to its junction with the Lachlan, and, later, S.W. to the Murray. Of its total course of 1,350 m., 500 m. are navigable. See *Burrenjack*.

Murshidabad. Dist. and town of Bengal, India. In the Presidency division, the dist. forms the N. part of the Ganges delta, where the river, its main channels known locally as the Bhagirathi and Padma, no longer floods and adds silt to the alluvial plain. The area is 2,143 sq. m. Pop. 1,372,000.

The town stands on the Bhagirathi, and was established in 1704 by the nawab Murshid Kali Khan as the capital of Bengal; it declined after 1790, when Lord Cornwallis made Calcutta the capital. Most of the old buildings are in



Sir John Murray
British biologist
Elliott & Fry

ruins. The nawab resides in a modern palace. It is the centre of the Indian silk industry, and makes bandanas, ivory carvings, gold and silver embroidery, etc. Pop. 12,700.

The nawab bahadur of Murshidabad is the premier noble of Bengal. Born Jan. 7, 1875, he succeeded in 1906, after being educated at Rugby and Trinity College, Oxford. He took a prominent part in Indian public affairs, being a member of the legislative council of Bengal, represented that state at the coronation of Edward VII, and attended the durbar of 1902. He was created K.C.S.I. in 1910 and K.C.V.O. in 1912.

Murut. Primitive people of Indonesian stock in Sarawak and N. Borneo. Estimated as numbering 250,000, shortish and wavy-haired, they are coarser, longer-headed, lankier, ruddier, and less Mongolised than other Bornean peoples. Their customs betoken Philippine contact prior to the Kayan immigration. See Dusun.

Murwillumbah. Municipality in Rous co., New South Wales, Australia. It is almost on the border of the state, the terminus of the coast rly., 80 m. by rly. from Casino, and the centre of a dairying district. Sugar canes are grown in the vicinity. Pop. 2,700.

Murzuk OR MOURZOUK. Chief town in Fezzan, in Italian Libya, and an important oasis. The city, founded in 1310, was formerly the capital of the Turkish administration of Fezzan. It owes its importance to its position on the chief caravan route from Tripoli to the W. Sudan. Pop. 3,000.

Musaceae. Family of monocotyledonous plants, of which the banana is a well-known member. See Banana; Manila Hemp; Plantain; Scitamineae.

Musaëus. Greek poet generally known as the Grammarian. He is supposed to have lived about the 6th century A.D., and was the author of a well-known little epic, *Hero and Leander*. There have been many imitations of this charming poem, notably that of Marlowe, completed and published by George Chapman, the translator of Homer.

Musa Ibn Nosair (640-716). Arabian soldier and administrator. Born at Mecca, he was employed by the Caliph Walid I to complete the conquest of N. Africa, and by 709 had extended the Arabian empire as far as Morocco. He sent his lieutenant Tarik to Spain, who in 711 secured mastery over a great part of the Iberian peninsula. Tarik was joined in 712 by Musa, who overthrew Roderick, the Gothic king of Spain, but was re-

called by Walid 714, having been accused of corruption by Tarik. Deprived of his command and sentenced to a heavy fine, he died on his way to Mecca.

Mus. B. Abrev. for bachelor of music.

Muscae Volitantes. Term applied to little black specks, something like flies, which many people see floating before their eyes. They are the shadows of minute bodies in the vitreous humour. They sometimes give rise to alarm, but do not as a rule indicate any disease or disorder, although often associated with indigestion, and if disregarded will soon cease to be observed. In one form, however, they may be symptoms of serious disease of the eye.

Muscarine. Poisonous alkaloid found in fly agaric (*Agaricus muscarius*), and the fungus *Amanita pantherina*. It has been prepared artificially by the oxidation of choline with nitric acid. The name is also applied to blue aniline dye.

Muscat, MOSKAT, OR MASKAT. Capital and port of Oman, S.E. Arabia. It stands on the S. shore of the Gulf of Oman.

Among its exports are pearls, dates, and horses, and its imports include rice, coffee, sugar, silks, and cotton goods, most of its trade being with India. It is the residence of a British political agent and consul. It was occupied by the Portuguese from 1508 to the middle of the 17th century, becoming the capital of an independent state again under a native sultan in 1741. To support the Sultan of Oman, British troops were in Muscat in 1915, and took part in defeating assaults by disaffected tribesmen, but these operations had nothing to do with the Great War. Pop. 25,000.

Muscatal OR MUSCADEL (Ital. *moscado*). Generic term for wine derived from the parent vine of the same name. A highly alcoholised, sweet, rich wine, either white or red, it is distinguished by a strong musk flavour. Muscatel wine is made in S.W. France, N. Spain, in Italy, Sicily, Capri, Corfu, Crete, Cyprus, the Canaries, the Cape, Switzerland, and elsewhere. Of the French, the white Rivesaltes and the red Banyuls are fine wines; of the Italian, *Lacrima Christi* (q.v.) is the most favoured.

Muscatine. City of Iowa, U.S.A., the co. seat of Muscatine co. It stands on the Mississippi river, 44 m. N.N.E. of Burlington, and is served by the Chicago, Rock Island and Pacific, and other rlys. It has canneries, engine and boiler works, foundries and machine shops, and manufactures bricks and tiles and pearl buttons. A large trade in sweet potatoes and water-melons is carried on. Organized as a town in 1836, Muscatine was incorporated in 1839, and became a city in 1851. Pop. 16,100.

Muschelkalk (Ger., shell lime). In geology, middle subdivision of the Triassic system of rocks. Typical in Germany and in many parts of the Continent, they are chiefly limestones rich in the remains of mollusca. Over 300 ft. thick in places, the formation is an important source of salt, marls, and gypsum. Many saline springs of Germany are found in the muschelkalk.

Muscle. Tissue possessing power of contraction by which, in the higher animals, movements are performed. Muscles are divided into two main classes: voluntary



Muscat, S.E. Arabia. The old fort built by the Portuguese during their occupation of the city

muscles, the action of which is under the control of the will; and involuntary muscles, not controlled by the will.

Voluntary muscles are attached to the bones and are sometimes called skeletal. They consist of masses of fibres, each fibre being about 1 in. in length and 1/500th in. in diameter. Under the microscope the fibres are seen to be marked by alternate dark and light markings, and this form of muscle is in consequence sometimes termed "transversely striated" muscle. Each fibre is surrounded by a sheath, called the sarcolemma, inside which is soft tissue possessing the power of contraction. When a muscle is stimulated by a nerve and contracts, the fibres become shorter and thicker. In some animals and fishes certain

of the muscles are red, due to the presence of haemoglobin in their contractile substance.

Involuntary muscles are under the control of a different part of the nervous system, and cannot be made to contract by an effort of the will. This type of muscle forms the muscular tissue of the heart, and is also found in the walls of the oesophagus, stomach, intestines, uterus, bladder, blood-vessels, and other organs. The involuntary

Musculo-Spiral Nerve. One of the main nerves of the arm. It arises from the brachial plexus on the outer side of the armpit, winds round behind the humerus, and passes down to terminate in front of the external condyle of the humerus by dividing into the radial and posterior interosseous nerves. It supplies the triceps and other muscles at the back of the arm, and is also the nerve of sensation to the back of the arm and a considerable area of the forearm. Paralysis of the musculo-spiral nerve produces the condition known as dropped wrist. See Arm; Nerve.

Mus. D. OR Mus. Doc. Abbreviation for doctor of music.

Muses OR MUSAE. In Greek mythology, the divinities who presided over the liberal arts. They were supposed to be daughters of Zeus, nymphs born in Pieria, at the foot of

ciated with them. They are the companions of Apollo, and sing to his lyre.

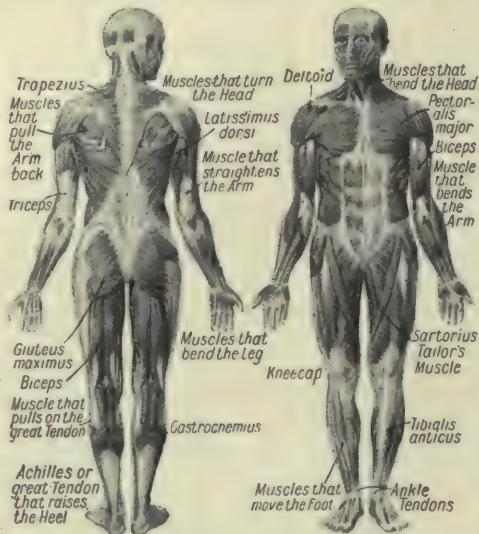
The muses were at first three in number, and nine in later legend. Their names are: Clio, the muse of history, represented sitting with an open scroll; Euterpe, the muse of lyric poetry, with a flute; Thalia, the muse of comedy and pastoral poetry, with a comic mask and a shepherd's staff; Melpomenē, the muse of tragedy, with a tragic mask, the club of Hercules or a sword, and the cothurnus; Terpsichorē, the muse of dancing, with the lyre and plectrum; Erato, the muse of love songs, with the lyre; Polyhymnia, the muse of sacred song, of pensive appearance; Urania, the muse of astronomy, with a staff, pointing to a globe; Calliope, the muse of epic poetry, with tablet and stylus. The Roman nymphs Camenae or Casmenae were identified with the muses. See Calliope; Clio; etc.

Musette. (1) Musical instrument of the bagpipe class. It was popular in France in the 17th and 18th centuries. (2) A small hautboy, whose tone resembles that of the melody pipe of the one mentioned above. (3) A pastoral dance in duple or triple time. The suites of the 18th century sometimes contain musette airs, alternating with the gavottes.

Museum (Gr. *mouseion*, the seat of the muses). Repository for the preservation and exhibition of objects of natural history, antiquity, science, and art, also applied to the collection itself.

Museums are comparatively modern institutions, few going back to the 18th century. In classical times museums in the modern sense were unknown, the museum of Alexandria, founded about 280 B.C., being a university building, although it probably contained collections of all kinds. The extensive collection of objects of art and curiosities is not recorded till after the Renaissance. These early collections were known as cabinets of rare and curious objects, cabinets of medals, etc. Probably the earliest was the collection of natural history objects made by Georg Agricola.

The oldest surviving museum established on a sound basis is the Ashmolean Museum (*q.v.*) at Oxford. Francis Bacon in his *New Atlantis* elaborated the idea of a great national museum of science and art. The first great and typical museum, apart from the Ashmolean, which at first was comparatively small, was the British Museum, founded in 1753. Important early museums formed by private individuals were Sir Hans



muscle of the heart is striated, but the involuntary muscle in other parts does not exhibit striations, and is termed "plain" muscle. It is composed of elongated cells about 1/600th of an in. long, each with an oval nucleus and covered with a delicate sheath. See Anatomy; Biceps; Face; Jaw; etc.

Muscovite. In mineralogy, name given to a mineral of the mica group. It is one of the commonest varieties of mica (*q.v.*).

Muscovy. Old name for Russia. Derived from Moscow, it means the district around that city, and was generally used for Russia until well into the 18th century. See Russia.

Muscovy Duck (*Cairina moschata*). Species of duck, occurring naturally in Central and S. America, but largely introduced elsewhere as an ornamental bird for lakes and parks. They live in the forest swamps, where they nest in the trees, and their food is almost entirely vegetable. The colour of the plumage is glossy purplish green on the upper parts, with brownish black crested head, neck, and under parts. The male is much larger than the female



Muscle. Top, diagrams showing back and front views of the distribution of the principal muscles of the body and their mode of action. Below, magnified portion of muscle fibre showing nerve ending

Mt. Olympus; hence they were sometimes called Pierides. Mt. Helicon in Boeotia and Mt. Parnassus in Phocis were also asso-



Muscovy Duck. Tree-nesting duck, found naturally in Central and S. America

Sloane's museum, now the British Museum; Sir Ashton Lever's, of the late 18th century, probably the largest formed by a single person, afterwards owned by James Parkinson, and finally dispersed by auction in 1806. A number of museums, especially some of the larger and more important, were derived originally from collections formed by princes, nobles, etc.

There are numerous varieties of museums, and these can be classified in several ways. A very broad difference lies in the bodies maintaining them, as national museums, which are maintained by the state and situated usually in the capital; provincial or municipal museums, maintained out of the rates; museums of a semi-public nature, maintained by universities, societies, and schools; and lastly private museums, maintained by private individuals, and sometimes open to the public, as the King John's House Museum, Rushmore, or the Wellcome Historical Medical Museum, London. Private museums usually tend to become public museums. The sacristies of some foreign cathedrals are often shown as museums, and contain ecclesiastical objects, and sometimes other specimens.

Art and Science Collections

Museums may also be classified according to the contents and the ideas underlying their arrangement. They are generally differentiated into art and science museums, and the varieties may be such as comparative anatomy (Royal College of Surgeons), botany (Kew), geology (London and Berlin), eastern religions (Guimet, Paris), furniture (Geffrye Museum, London), history of London (London and Guildhall Museums), the evolution of man-made objects (Pitt-Rivers, Oxford), folklore (Musée de Folklore, Antwerp), folk or open-air museums (Skansen, Stockholm), war museums, museums of archaeology, shipping, whaling, etc.

A very distinct type of museum is that which illustrates and commemorates the life and work of a person, the museum building being usually the house of, or intimately connected with, the person commemorated, as the Shakespeare museum (Stratford-on-Avon), Dickens (Portsmouth), Borrow (Norwich), Wm. Wilberforce (Hull), Dürer (Nuremberg), Beethoven (Bonn), Michelangelo (Florence), etc.

The main functions of a museum are the collection and preservation of specimens and data, which help to widen knowledge by the investigations of experts, and the educa-

tion and instruction of visitors and students by its exhibits and the method of display. Some museums now have a special portion set aside for children; in the U.S.A. there is a special children's museum. The functions of a local museum should be to centralize mainly on the history, natural history, archaeology, etc., of the locality.

Open Air Museums

Most museums arrange their exhibits to illustrate particular branches of knowledge, e.g. to show the types of British sea-birds, the ceramic art of China, the evolutions of musical instruments, and the distributions of the various types, etc. A form of exhibit common on the continent of Europe is the reconstruction of interiors of rooms, to show the different types of building, architecture, furniture, and modes of living at different periods and in various districts. Particularly noteworthy in this direction are the museums at Zürich, Munich, Amsterdam, Stockholm, Christiania, etc. A still greater improvement in this direction is the idea first started by Dr. A. Hazelius, at Stockholm, of an open-air museum, now part of the Northern Museum, and known as Skansen. In this way national or local life and history is exhibited in the most attractive manner, with whole buildings preserved and suitably fitted up and furnished, as well as other out-of-door objects, with also exhibitions of folk dances, games, and other pastimes of former days. This type of museum arrangement is common in Scandinavia. **G. R. Carline**

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Musgu Country. Former dist. of Central Africa, bordering on Bornu and Baghirmi. It occupies a portion of the basin of Lake Chad between the Logone and Shari rivers. The Mosgu people are fishers and tillers of the ground. See Africa.

Mush or Moush. Town of Armenia. Situated near the Murad Su branch of the Euphrates, it is about 80 m. S. of Erzerum, or 40 m. W. of Lake Van. Before the Great War it was the natural centre of the trade of a wide district, and contained several mosques and churches. It was the seat of a R.C. and of a Gregorian bishop. Largely peopled by Armenians, it was surrounded by a number of prosperous

Armenian villages. In July, 1915, the Turks, having massacred the Armenians in the neighbourhood, took Mush after heavy fighting in the streets. Much of the town was reduced to ruins, and the surviving Armenians were slaughtered or deported. The Russians drove the Turks out of it on Feb. 19, 1916, but had to evacuate it temporarily in Aug., 1916, and finally abandoned it in the winter of 1917-18, when the Turks reoccupied it. Pop. (before the war) 30,000.

Mushaidie, BATTLE OF. Fought between the British and Turks, Mar. 14-15, 1917. Mushaidie, a village 20 m. N. of Bagdad, Mesopotamia, which gives its name to the battle, is situate a short distance from the river Tigris, on its right bank. It is a station on the Bagdad rly. After the fall of Bagdad (q.v.), on Mar. 11, 1917, Maude sent a force along the Tigris to cut off the retreating Turks. The Indo-British cavalry belonging to it in less than 24 hours reached a point 30 m. from Bagdad, and, assisted by British gunboats in the river, soon had the Turks cut off.

Meanwhile, the British infantry were following the Turks as they retreated along the right bank of the Tigris. The latter put up a series of stubborn fights, and the British had to storm a succession of ridges, including that known as Sugar Loaf Hill. On the 14th the infantry came up with the enemy at Mushaidie station, and heavy fighting ensued. The battle ended at 3 a.m. on the 15th, in the complete defeat of the Turks, and allowed Maude to push rapidly on to Samarra. See Mesopotamia, Conquest of.

Mushki OR MUSKI. Ancient people of Aryan relationship in Asia Minor. The Moschi of Greek writers, they inhabited Mushku, the Biblical Meshech (Ezek. 32). They came into hostile contact with the Hittites and Assyrians about 1200 B.C., but were successively subdued by Tiglath-Pileser I, Ashurnatsirpal, and Sargon, who in 709 defeated their king, Mita, a name perpetuated in the Midas of later Phrygian history.

Mushroom (*Psalidium campestris*). Black-spored fungus of the order Agaricineae. A native of Britain and the temperate portions of Europe, it occurs profusely in pastures where horses have grazed, their manure affording the most favourable pabulum for the plant. What is known as the mushroom is only the spore-bearing organ or fruit of the fungus, the vegetative portion living in the ground as a ramification of white cottony filaments (*mycelium*),

thriving as a saprophyte upon organic waste. At certain points upon the mycelium swellings are produced, which develop into small sporophores enclosed in a universal wrapper (*volva*).

The old idea that mushrooms are formed in a night has no foundation, for the process may take many months. Under favourable conditions of warmth and moisture a rapid expansion of the cell structure takes place, similar to what occurs when a dry bath sponge is dipped into water. The sporophore bursts through the earth, ruptures the *volva*, and the upper part (cap or *pileus*) expands in umbrella form. Under the cap thin plates set edgewise radiate from the stalk, and on these the microscopical spores are produced in sets of four, aggregating millions. The commoner horse-mushroom (*P. arvensis*) agrees with *P. campestris* in most points, but is much larger and more strongly flavoured than the latter variety.

The cap of the common mushroom is white and silky, at first hemispheric, then flat, from 3 to 5 ins. across. The plates or gills, which are at first salmon-pink, become dark umber as the spores ripen. It appears in nature from May to December, but, cultivated in specially prepared beds, where the proper temperature and humidity are maintained, it may be obtained at all seasons. For this purpose caves, cellars, railway arches, and disused tunnels have been utilised; more commonly they are grown in special houses, or in covered beds outside. These are prepared from fresh stable manure, turned and loosened daily until the fiercest heat of fermentation has escaped; then it is packed firmly to a depth of about a foot on a firm dry base, and boards on edge are fixed along each side to prevent loss of heat and moisture.

When the temperature has dropped to 80° or so, the bed may be impregnated by pressing in pieces of an old mushroom-bed or of the so-called mushroom-spawn sold by nurserymen. These bricks are permeated by the mycelium in a dry and therefore resting condition; they should be broken into pieces about 1 in. square, and dotted all over the bed about 4 ins. apart. The bed should then be evenly coated with finely sifted loam to a depth of an inch, and beaten firm. A covering of litter will help to retain moisture and an equable temperature, which ought not to fall much below 50°. Slight waterings will be necessary occasionally to maintain moisture, but only tepid water should be used.

When the mushrooms appear they should be gathered in the unexpanded or "button" stage, as the flesh is quickly attacked by the larvae of flies, which render them unwholesome. Poisoning by eating mushrooms is due either to these being in a decaying condition, or to the appearance of definitely poison-

ous species in the bed whose spores were introduced with the manure. Numerous allied species of fungi are equally good as food, but cannot be grown artificially with the same certainty. See *Agaric*; *Blewits*; *Fungus*; *Hedgehog Mushroom*; consult also *Toadstools and Mushrooms*, E Step, 1913. *Edward Step*

MUSIC: A FORM OF EXPRESSION

J. E. Borland, Mus.D., Musical Adviser to the L.C.C.

This Encyclopedia contains articles on all the important musical instruments, e.g. Clarinet; Organ; Violin, and on the musical terms, e.g. Counterpoint; Fugue. See also Harmony; Opera, and articles on Beethoven; Mendelssohn, and other great musicians

Music has been called at once the oldest and the youngest of the arts—oldest, because a time is unimaginable when men did not use vocal inflexions for the expression of emotion, or rhythmic noises for the accompaniment of bodily movements; youngest, because poetry, painting, sculpture, and architecture reached maturity centuries before music began to emerge from its crude elementary stages and to become a real art of expression. Inarticulate song allied itself with articulate language; rhythmic noises became coordinate with vocal inflexions, and with their imitations upon instruments the art of music was slowly and laboriously evolved.

Its history shows the innumerable stages by which man reduced certain natural phenomena to obedience, and brought aimless noises into orderly control. Apart from the human voice and its emotional rise and fall of pitch, with or without definite language, apart from the ordering of percussive sounds to satisfy man's timesense, the laws of acoustics had to be discovered empirically, and the distinctions between various types of vibrating bodies had to be learnt, before instrumental music could be developed—a kind of music that, while founded upon human vocal effects, should transcend them in compass, intensity, and variety.

Essentials Applied to Instruments

Records of the early developments are wanting, but something of the story can be reconstructed by examining the music of existing primitive races and the relics of early instruments. In all instruments we find three essentials: (1) a force to cause (2) the vibration of an elastic body, and (3) a resonator by means of which the vibrations are amplified and carried to the ear. These three essentials may be called briefly the originator, the vibrator, and the resonator. In flutes, these are the player's breath, the air reed at the mouth-hole, and the column of air in the

tube; in reed instruments, the player's breath, the reed, and the tube; in trumpets and horns, the breath, the vibrating lips, and the tube; in bowed instruments, the friction of the bow, the string, and the body of the instrument; in harps and lyres, the plucking by finger or plectrum, the string, and the body.

The history of instrumental development is the story of the gradual improvement of materials and proportions, and the acquirement of skill in control, aided by mechanical means for securing variation of pitch. It was a long journey from the lyre to the piano-forte, from the river-reed to the organ, from the conch-shell to the chromatic trumpet; but the stages are clear.

Early History

The story of music itself is equally long. Vocal music offered comparatively little difficulty to the pioneer as long as melody only was considered. It was a development of speech inflexion, as natural as speech itself, but with more sustained tone. Harmony was the real problem. Simple chords on the lyre had to suffice at first for accompaniment, merely maintaining pitch and confirming the key-centre. They would serve also to emphasise rhythm and mark off the phrases. Music is a social art, and many voices can be employed simultaneously. But continuous unison is tiresome, while voices are obviously not best suited in providing mere chords of accompaniment such as the lyre, harp, or lute can do better. From this impasse grew polyphony, voices used independently but in agreement, after many centuries of painful experiment.

From the 13th to the 16th century musicians were employed in finding effective ways of combining voices. The "organum" and "faux bourdon" of the schoolmen of England, France, and the Netherlands was less pleasing than the simple rhythmic strains of the people and of the troubadours and

trouvères, but it was a necessary step in the evolution of the art and led to the glorious era of the madrigal (16th to 17th centuries) and the zenith of the fugue form in the early 18th century.

Meantime, instruments had been developing rapidly. Viols were perfect by 1550; wind instruments rather less so, but were very useful for contrast. The lyre, dulcimer, and harp classes came under mechanical control in the clavichord, spinet, and harpsichord types, with enormously enhanced possibilities. A new problem presented itself—how to make use of these powers. Viols could sustain sounds, like voices; could represent various vocal pitches by their different sizes; could vary tones expressively. What more simple than to make madrigals "apt for viols or voices"? Simple, yes; but not satisfying for long. Instruments could do so much more than voices, and new methods of use must be found to exhaust their capabilities. Broken chords, scale passages, and ornaments of all kinds were added to the plainer vocal outlines. This was especially the case with the keyboard instruments, which had little power of sustaining or varying the tone.

Use of Wind Instruments

Rather more vocal were the wind groups, but even these gradually found their distinctive uses; flutes for suavity, reeds for incisiveness, brass for brilliancy. And so the orchestra was evolved, a weirdly unbalanced mass in the hands of Monteverde ("Orfeo", 1607), a thing of beauty with Mozart, an engine of power in the hands of Beethoven. Monteverde gathered all the instruments he could and hardly knew what to do with them. His successors wisely seized on the strings as the basis, the more brilliant violin family soon supplanting the gentle viols.

The less manageable wind instruments were thrown out for a time, and then gradually reintroduced on probation; this process can be traced through the scores of Lulli, Purcell, Handel, Bach, Haydn, Mozart, and Beethoven. Beethoven's band, with amplifications in the wind and percussion departments, remains the medium for the most modern orchestral composers. The greatest improvements in the wind instruments are only about a century old; these include the addition of new finger keys to the woodwind, to complete the scale and make quick passages more manageable, and the additions of pistons to horns, trumpets, etc., to make them usable through all the chromaticism of to-day.

As regards forms of composition, it has been said above that the imitation of vocal forms was tried and found wanting. Florid ornamentation had its day and found its level. A new language for instrumental music was found in the 17th century in the forms of the dances, with their contrasts and balance of phrases and keys. Combined in sets or suites, these dances formed agreeable works of satisfying length. From the movements of the suites came sonata-form in its various manifestations, and this has been the basis of nearly all serious instrumental music until recently, including chamber, sonatas, duets, trios, quartets, etc., concertos and symphonies. A great factor in this development was the invention of the piano-forte in the 18th century, offering fuller tone, more varied expression, greater sustaining power and larger compass than its predecessors of the harpsichord family.

Small Compass in Early Use

Until about 1600 the compass of a voice which was called for by composers was quite small, often not exceeding an octave. The invention of opera about that time led to a study of the voice as a medium for display, and doubtless the newer florid instrumental music had its influence also. In Italy especially, the voice was raised from a mere speech-medium to an instrument of great compass and flexibility, so much so as almost to lose sight of its intention as a vehicle of expression.

For two centuries (1670-1870) European music was dominated by two nationalities—Italian in opera, and German in instrumental forms. That period is past, and there has come a healthy resurgence of the other peoples. The revival of folk-song has been a strong cause of this, aided by the rise of local schools. To-day each country can educate its own students, and we see the result in the groups of young composers now occupying the field, from Russia, Sweden, Norway, Denmark, France, Holland, the Czecho-Slovak countries, America, and the British Empire. British growth in this respect is remarkable: whereas in 1821, that country had Bishop and a few church composers and ballad writers to show against such names as Beethoven and Schubert, she has now had 50 years of "Renaissance" which have gone far to compensate for her loss when Purcell died and the Italian opera and Handel began their domination.

COLOUR MUSIC. A possible connexion between colour and music, based on the physical origin of both

from vibration, has long fascinated certain minds, notwithstanding that the two phenomena stand at opposite ends of the vibrational gamut, the vibrations being only a few thousands for music at its highest, and trillions in the case of colours. Instruments played from a keyboard have been invented (e.g. the colour-organ, by A. Wallace Rimington, and the *tastiera per luce* for Scriabin's *Prometheus*), the various tints being projected on a white screen. Red is chosen arbitrarily to represent the note middle C, from which other tints are arranged in order. Interesting as these experiments may be, they have failed so far to demonstrate an intimate connexion between colour on the one hand and melody or harmony on the other, especially as there is no possibility of securing these musical effects due to the different pitch of the various octaves, the colours above and below the spectrum not being perceptible to the human eye. The association of a particular colour with a given object is termed *photism*. There are *photisms* not only of musical sounds, but of numbers, of names, of the alphabet, etc., but they seem to be individual and not general, as they vary in different cases. See *Music: Its Laws and Evolution*, Jules Combarieu, Eng. trans. 1910; *Colour Music*, A. Wallace Rimington, 1912.

MUSIC OF THE MASS. From earliest centuries in the history of the Christian Church some form of singing has been employed, varying from monotone with slight inflections, through inflected monotone of a more elaborate type, to the polyphonic music of the 15th and later centuries. The portions of the Mass which were chiefly chosen for musical treatment were the Kyrie, Gloria, Credo, Sanctus, Benedictus and the Agnus Dei.

Polyphonic Mass Settings

In these polyphonic settings a plainsong melody was chosen and other voice parts were woven around it, in number from 2 to 12, and even more; sometimes the melody was a secular one, and this led to levity when irreverent choirmen substituted the original words of a love song or drinking song for the Latin words of the Mass. Occasionally a composer provided his own *Canto fermo*, and treated it in the same way by the addition of cleverly interwoven vocal parts. Composers of the polyphonic Mass, whose names may be used as links for further reference, include Dufay, Dunstable, Binchois, Morales, Van Rore, Goudimel, Willaert, Palestrina, Vittoria, Gabrieli, Orlando Lassus,

William Byrd, and Gregorio Allegri, with whom the polyphonic school practically died out in the middle of the 17th century.

In the 18th and early 19th centuries we have as musical landmarks the Masses of Bach, and the beautiful but not strictly ecclesiastical compositions of the Italian and Viennese schools, including Haydn, Mozart, and Schubert. Beethoven's Mass in D, 1823, may be reckoned the culmination of this type. During the later part of the 19th century and continuing into the 20th, there has been a steady revival of interest in polyphonic music, and reprints of the finest examples have been made, helping to redeem the cult of this music from the antiquarian atmosphere which had hitherto surrounded it.

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Music, GUILDHALL SCHOOL OF. Founded by the corporation of the city of London, Sept., 1880, for the provision of sound tuition in all branches of the art for professional and amateur students. A beginning was made in a warehouse in Aldermanbury, with 62 students and 29 professors. In 1887 a new building was opened in Tallis Street, Blackfriars, E.C., and this was greatly enlarged in 1898. A full professional curriculum is provided, as well as opportunities for amateur culture in single subjects. The students in 1921 numbered more than 3,000.

Music, ROYAL ACADEMY OF. London school for musical training, the oldest in the metropolis. It was founded in 1822, with George IV as chief patron, and Lord Burghersh, afterwards earl of Westmorland, as chairman. Provision was made for forty boys and forty girls, all resident, and the academy was opened March 24, 1823, with a staff of about 40 professors.

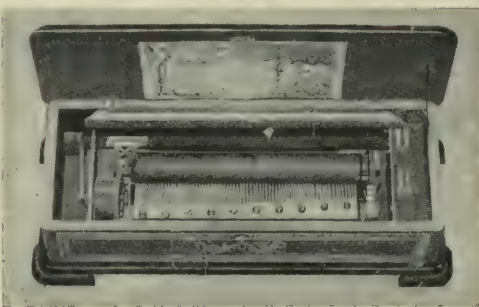
The old houses in Tenterden Street, Hammer Square, becoming outgrown, a site was secured on the edge of Regent's Park, and a splendid building erected in 1911, fully equipped with a fine concert hall and teaching rooms of all kinds. The royal academy of music gives diplomas of F.R.A.M., A.R.A.M., and L.R.A.M., and joins the royal college of music in an associated board for local and school examinations throughout the Empire. The address is York Gate, Marylebone Road, London, N.W.

There was an earlier society bearing this name, founded by subscription in 1720 to guarantee performances of Italian Opera in London. From 1720-28, operas by Buononcini, Ariosti, Handel, Scarlatti, and others were produced with varying success, but the season 1727-28 was a financial failure and the academy came to an end.

Music, ROYAL COLLEGE OF. Association in London for the encouragement of musical study. The successor of the national training school for music, it was founded by King Edward, then prince of Wales, in 1882, was incorporated by Royal Charter, May 23, 1883, and governed by a council.

Beginning with 50 scholars and 42 paying pupils, the numbers on the roll grew rapidly, and the old building of the national training school became inadequate. A new building, the gift of Samson Fox, was opened in Prince Consort Road, S.W., in 1894, and to it was added in 1901 a fine concert hall. The college owns the valuable library of the Sacred Harmonic Society, which was disbanded in 1882, the library of the concerts of antient music—presented by Queen Victoria—and the Donaldson Museum (1894) of old and rare musical instruments. The curriculum includes all subjects necessary for complete education in every branch of music, and the average course covers three or four years.

Musical Box. Instrument producing music by mechanical means. Clock-work, driven by a spring,



Musical Box opened, showing comb and barrel actuated by the clock-work on left

moves a cylinder from which pins project at proper positions, and strike the ends of steel vibrators tuned to the notes of the scale, the vibrators and the continuous steel plate from which they are cut, and which gives them resonance, forming a sort of graduated comb. Mechanical musical toys of great ingenuity were made as early as the 15th century, especially in the

Netherlands; in their present form they date from the beginning of the 19th century, and are still chiefly produced in Switzerland, the country of their origin. Some of the larger specimens contain as many as 36 tunes on one barrel, and allow of exchanging barrels.

Musical Festival. Music-making on a large scale, the concerts being generally spread over more than one day. In England the oldest is The Three Choirs' Festival of Gloucester, Worcester, and Hereford, founded in 1724, and held annually in the above cities in rotation. Other important festivals, held mostly at triennial periods, were Birmingham, 1768; Norwich, 1824; Leeds, 1858; Bristol, 1878; Cardiff, 1892; and Sheffield, 1895. Festivals aim not only at the performance of standard works of known popularity, but also at the encouragement of British art, by commissioning native compositions, and occasionally of foreign works, as Mendelssohn's *Elijah*, Gounod's *Redemption*, and Dvorak's *Spectre's Bride*, etc. Amongst the chief British composers whose works have been given are Sullivan, Stanford, Parry, Mackenzie, Elgar, and Cowen. The Handel Festival at the Crystal Palace, Sydenham, founded in 1857 and held triennially, is devoted solely to music by Handel.

A development of the musical festival has been the music competition festival founded on the lines of the Welsh Eisteddfod. The largest of these are the Stratford and E. London, founded 1882, the Westmorland, 1885, and the London, 1905. The competitions are choral, vocal, and instrumental, and the scheme includes public concerts by the prize winners.

Musical Glasses. Musical instrument, consisting of a set of glasses tuned by having water poured into them, and played with

the fingers. It is more often known as the Harmonica (*q.v.*).

Musical Terms. Terms used to indicate the various means by which a composer shows the precise character of a musical work. They fall into different classes according to their nature and signification. The first has to do with notation, *e.g.* staff, clef, notes, rests, bars, sharps, flats, etc., and covers

pitch, time, and rhythm. The next class embraces terms referring to the pace of the music, such as *allegro*, *moderato*, *andante*, etc., of equal importance being those of the third class affecting style, phrasing, and expression, such as *animato*, *grazioso*, *brillante*, and the like. The dynamic class is concerned with the various degrees of force required, such as *p.* (*piano* = soft), *f.* (*forte* = loud), *crescendo* (increasing), *diminuendo* (lessening), etc. Many of these terms, with the exception of those in the first class, may be qualified by additional terms, such as *un poco* = a little (*un poco animato* = rather animated), or *non troppo* = not too much (*non troppo allegro* = not too fast). Then come the names of voices, instruments, etc., and next the terms used in respect to melody and harmony, such as *scale*, *interval*, *consonance*, *dissonance*, etc. Lastly, there are purely mechanical directions, e.g. *volti subito* = turn over the page quickly, *da capo* = from the beginning, and so on.

The usual language employed is Italian, due to the fact that in mediaeval days the great centres of musical instruction were in Italy. The words indicating style, pace, etc., were naturally those in everyday use, but they became conventionalised. Thus *allegro* (gay) now equals quick, and *andante* (going or moving) equals slow. For over a century composers have shown an increasing inclination to use their own language. See *A Concise Dictionary of Musical Terms*, F. Niecks, 1884; *Dictionary of Foreign Musical Terms*, T. S. Wotton, 1907.

Music and Dancing Licences.

Official authorisation issued by the county councils, without which no house may be kept for public dancing, music, or similar public entertainment. The governing statute in this matter before the passing of the Local Government Act of 1888 was the Public Entertainment Act of 1751, which enacted that any house in the cities of London and Westminster and within 20 m. thereof providing such public entertainment without a licence from the justices should be deemed a disorderly house.

The licensing committees meet annually in November, and may impose any conditions they deem proper, while the buildings must conform to structural conditions prescribed by the Metropolis Management and Buildings Act Amendment Act of 1878. Elsewhere in England and Wales music-halls, etc., are regulated by various local Acts somewhat similarly, while



Music Hall. Interior of Weston's Music Hall, High Holborn, predecessor of the Royal Holborn, from a print about 1865. Refreshments were served at the tables, while the chairman and his circle of "gilded youth" sat immediately before the stage in the place now occupied by the orchestra

under the Public Health Acts Amendment Act, 1890, Part 3, an adoptive measure, no house or garden, whether licensed for the sale of liquor or not, may be kept for public dancing, music, or similar public entertainment without a licence from the justices having power to grant licences for the sale of intoxicating liquor. See *Licensing Laws*; *Liquor Control*.

Music Hall. Place of amusement licensed for the performance of music, dancing, and varied public entertainment. It is thus distinct from a theatre, primarily intended for the exhibition of stage plays. The variety entertainment of the music hall is a natural development of the informal smoking concert, performers at which were regular frequenters of the tavern. The licensee of the premises next engaged professional singers and, making no charge for admission, recouped himself by the sale of refreshments to members of the audience between the items on the programme, which were announced by a chairman.

Saloon theatres attached to the larger taverns were the next stage, being licensed by the magistrates and permitted to charge for admission to the entertainment, which steadily encroached further upon the privileges claimed by the lessees of the patent theatres. In 1834 a performance of *Othello* at the Britannia, Hoxton, brought matters to a crisis. The producer and performers were fined, but the consequent agitation led to the abolition by Parliament of the patents, and to competition wholesome in its effect upon theatres and music halls alike.

The first music hall of the modern type was the Canterbury in Westminster Bridge Road, opened 1849. It achieved immense popularity under the management of Charles Morton, who afterwards built the Oxford Music Hall in Oxford Street, opened in Jan., 1893, and brought success to the Palace theatre which, having failed as an opera house, was devoted to variety entertainment in Dec. of the same year. The Alhambra theatre in Leicester Square was built in 1854 and, failing as The Panopticon of Science and Art, as which it was designed to rival the Polytechnic, was converted into a music hall in 1857. The original structure was burnt down in 1882, and the present Alhambra was opened Dec. 3, 1883. The Empire, Leicester Square, was erected on the site of Savile House, once a royal residence, later an exhibition gallery and then a *café-chantant*. It was opened in 1887 as a vaudeville theatre with comic operas and burlesques, but soon was devoted to variety.

Musicians' Company, THE. London city livery company. It originated from a Society of Minstrels, was first incorporated April 24, 1473, reconstituted July 8, 1604, and included dancing within its province. Claiming to be the only city company which retains a professional character, its corporate income is £425; trust income, £140. Office, 16, Berners Street, W.



Musicians' Company arms

Musk (*Mimulus moschatus*). Perennial herb of the natural order Scrophulariaceae. A native of N. America, its juicy underground stems creep extensively in moist soil. The above-ground branches and the thin, opposite, oblong leaves are densely coated with soft clammy hairs which exhale the musky odour to which the name is due. The yellow tubular flowers have five lobes, and the stigma has two lobes, which are irritable and close together on being touched. Musk, which was introduced to Britain in 1826, is a favourite pot plant, easily raised from the minute seeds, or by division of the numerous underground stems. It requires frequent, copious waterings. Harrison's musk is a larger, cultivated form. See *Mimulus*.

Musk. Dried secretion from certain glands of the male musk deer (*Moschus moschiferus*). Its natural purpose appears to be for the attraction of the female. It has been long in request both as a medicine and a perfume—the former as a stimulant affecting the circulation, and as an antispasmodic. As imported it forms soft, greasy lumps of a red-brown tint, giving out the strong, peculiar odour always associated with the name. It can be dissolved in ether. Like civet, it forms the basis of many choice perfumes; and in its natural condition is probably the most enduring of all odours—so long as the substance remains, the odour suffers no diminution. When newly extracted from the deer, however, it is more repulsive than attractive.

Musk Deer (*Moschus moschiferus*). Small species of deer found among the mountains of Central Asia. Usually found in pairs, never congregating in herds, it is about 20 ins. high, has a greyish-brown



Musk Deer. Young female of the Central Asian species of deer

W. S. Bertridge, F.Z.S.

pelf, and in certain anatomical features approaches the antelope. Neither the male nor the female has antlers. The upper canine teeth of the male are about 3 ins. long, and project as conspicuous tusks. It is much hunted for the valuable musk, secreted by an abdominal gland and used as an ingredient in many costly perfumes.

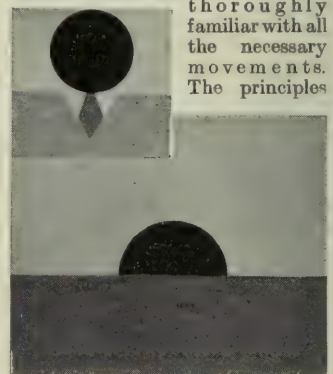
Muskegon. City of Michigan, U.S.A., the co. seat of Muskegon co. Situated along Muskegon Lake, through which the Muskegon river enters Lake Michigan, 39 m. N.W. of Grand Rapids, it is served by the Grand Trunk and other rlys., and by steamers plying to Chicago and other ports. Muskegon has a good harbour, from which large quantities of lumber, fruit, and garden produce are exported. Manufactures include pianos, furniture, refrigerators, paper, and knitted goods. Settled in 1834, Muskegon was incorporated in 1861, and became a city in 1870. Pop. 36,000.

Musket. General term for any form of smoothbore firearm used by a foot soldier. Muskets may be muzzleloaders or breechloaders, fired by the percussion system or by a flint, or by the application of a match to powder in the pan, hence the terms percussion musket, flint musket, matchlock. The harquebus, snapaunce, caliver, fusil, and carbine were in all essentials muskets. As late as 1867 the troops in India had seven different kinds of smoothbore firearms, viz. two muskets, four carbines, and a fusil for serjeants. The fusil used the musket ammunition, but was one pound lighter to carry. The so-called carbines were of the same calibre of the fusil and about the same weight. The official manual on shooting is still called Musketry Regulations. See Brown Bess; Firearms; Flintlock; Fusil; Guns; Matchlock; Rifle.

Musketry. Art of shooting with portable firearms in general, and with the military rifle in particular. Accuracy of small-arm fire as a factor of military importance has been a gradual development of organized warfare. It probably attained its zenith in the South African War, where accurate long range rifle fire played such an important part that in many quarters the view was held that infantry would never again be able to approach closely to the opposing forces. This led to every endeavour being made to train British infantry to become expert shots at all ranges as well as attaining a great proficiency in rapidity of fire. As a corollary, musketry was practically taught for the prone position.

The German army, on the other hand, fostered rapidity of fire rather than accuracy for the general body of the troops. This system developed firing from the hip, standing or kneeling positions, as of at least equal value to the prone position, the troops actually firing whilst advancing. The Great War showed that, despite the use of firearms, the opposing infantry were able to get into close touch.

In learning musketry, it is first essential that the recruit shall obtain a good working knowledge of his rifle, and to this end he is trained in rapid firing with the aid of dummy cartridges until he is



Musketry. Figure target used in British army, with semi-circular bull's-eye. Above, diagram illustrating principle of aiming, showing blade of foresight centred in notch of backsight, with bull's-eye resting on tip of foresight

of aiming are taught by adjusting the rifle in a stand, when the alinement of the sights is noted and corrected by the instructor, the correct sight being that the blade of the foresight is vertical, centrally disposed in the notch of the backsight, its tip level with the upper surface of the latter, and the bull's-eye of the target apparently resting on the tip of the foresight.

Actual firing practice begins with grouping, in which the recruit has to fire a number of shots at an ordinary bull's-eye without being told where he is hitting, but always taking the same sight. This enables the instructor to detect faults, such as taking incorrect sight, or pulling the trigger instead of actuating it by merely squeezing the butt with the rest of the hand. When proficiency in this practice has been attained, the location of each shot is indicated, and the aim has to be corrected for succeeding shots to bring them to the desired point. The usual practice is to proceed by easy stages up to a range of 1,000 yards, the targets used being representations of a soldier's head as it would be seen if he were in a

well-constructed fire trench. See Army; Ballistics; Bisley; Shooting; and the articles on Rifle and the various other weapons.

Musketry, SCHOOL OF. Military establishment for providing training in the theory and practice of rifle-shooting. At the central school of musketry, Hythe, Kent, the course includes instruction in aiming, firing, care of arms, mechanism of the rifle, theory of rifle fire, visual training, and ranging. The school, established in 1854, affords accommodation for about 400 officers, warrant officers, and N.C.O's, who alone have now to attend the school, the attendance of the rank and file being discontinued in 1880. The courses were remodelled upon the adoption successively of the Snider (1866), Martini-Henry (1870), and Lee-Metford, etc., rifles.

The school at Hythe is also known as the school of small arms. At the head is a general officer known as the commandant, and under him are a chief instructor, an experimental officer, several instructors, and assistant instructors. During the Great War Hythe was a machine-gun school, and for a time the musketry school of the Eastern Command, the army school of musketry being transferred to Bisley.

There is a school of musketry at Bloemfontein, S. Africa, established in 1904, and similar schools have been established in India (Pachmarhi, Satara, and Rawal Pindi) and in Canada. Qualification at any of these is equivalent to qualification at Hythe.

Muskogees (Algonquin, creeks). North American Indian tribe formerly ruling the Creek confederacy. Originally immigrant from the W., the British colonists in the 17th century found them in Georgia and Alabama, whose many sea-inlets suggested their name. The Creek war, 1813-14, cost them most of their land. By a conveyance, 1852, the Creeks ranked in Oklahoma as one of the five civilized tribes, until their separate nationhood ceased in 1906. In 1915 the Creeks numbered 18,776. The Muskogees give their name to the Muskogean family, which embraces Chickasaws, Choctaws, Natchez, and Seminoles. Preserving in the Gulf states the culture of the mound-builders, their ceremonial life included a worship of the four winds and of the sun. See American Indians.

Muskoka. Region of great natural beauty in the Lakes Peninsula, Ontario, Canada. It contains a river and lake of the same name. From 800 to 1,000 lakes are connected by hundreds of streams all available for passage

by canoe. The river rises in the S.W. corner of Algonquin National Park, and flows S. to Lake Simcoe, through the E. end of Lake Muskoka. On it the S. Falls are the chief of numerous waterfalls. The lake is 20 m. long. The region is a summer camping ground for Canadians and Americans, and contains several hotels. Steamers ply on the larger lakes, and the region, which is crossed by the G.T. Rly. and C.P. Rly., is attractive for its hunting, angling, boating, and bathing.

Musk Ox (*Ovibos moschatus*). Large ruminant mammal. Found in the Arctic regions, it is placed by zoologists between the sheep and ox. Its flesh is tainted with a musky flavour. It is covered with long, thick, brownish hair; and the horns of the male are wide and flattened on the forehead. Its



Musk Ox. Specimen of the North American ruminant found in Arctic regions

range is now confined to the extreme N. of America; but formerly it occurred in N. and Central Europe, and its bones are found in Great Britain. It lives amid the deep snow of the most barren regions, and seldom long survives removal to Europe. The Canadian government in 1920 entertained a scheme to domesticate musk oxen on a large scale on the vast tracts of barren unoccupied territory in N. Canada, with the object of creating a profitable source of wool-supply.

Musk Rat or **MUSK SHREW** (*Myogale*). Small insectivorous mammal, also known as Desman (*q.v.*).

Muslin. Fine cotton fabric used for dresses, curtains, etc. The name is generally believed to come from Mosul, a town on the Tigris, where the fabric is said to have been first made. Marco Polo refers to muslins of silk and gold made at Mosul. From early times India has been noted for its fine muslins, those of Dacca and Madras being specially delicate. There are also silk muslins, often sold under their French name of *mousselines*, but these are of less importance.

Muspratt, JAMES (1793-1886). British chemist. Born in Dublin, Aug. 12, 1793, he was for three



James Muspratt,
British chemist

years a druggist's apprentice, and then served in the Peninsular War with both the army and the navy. Having received a small property from his father's estate after a long chancery suit, he started the manufacture of chemicals, and in 1823 moved to Liverpool, where he began to make soda by the Leblanc process. He afterwards opened other works and engaged in the manufacture of sulphuric acid. A

friend of Liebig, he undertook the manufacture of super-phosphates and other artificial manures invented by that chemist. The founder of the South Lancashire alkali industry, Muspratt died at Seaforth Hall, Liverpool, May 4, 1886.

Muspratt, JAMES SHERIDAN (1821-71). British chemist. Born March 8, 1821, at Dublin, the eldest

son of James Muspratt, he studied chemistry at Glasgow and University College, London. He took

a post under Liebig at Giesesen, 1843, where he carried out important researches on sulphites, toluidine, and nitraniline. Returning to England, he settled in Liverpool, where he died April 3, 1871. His Dictionary of Chemistry, 1854-60, a standard work, was translated into Russian and German.



J. S. Muspratt,
British chemist

Musquash (*Fiber zibethicus*). North American rodent allied to the voles and beaver. It is found chiefly in Alaska and Canada. The head and body measures about a foot, and the stout tail is compressed from the sides to suit its semi-aquatic habits, whilst the hind feet are partially webbed. Herbivorous, like the British water-vole, it affects the margins of lakes

and large ponds, where in autumn it amasses great heaps of edible roots, reeds, and sedges, often plastered with mud on the exterior. Its burrows communicate with this store, which is gradually consumed from the centre during the winter. It possesses scent-glands with a strong musky odour, which has earned for it the alternative name of musk-rat, shared by the unrelated desman of Europe (*g.v.*) and the Indian shrew. The musquash is trapped extensively for the sake of its fur. See Fur.

Mussel.

A name popularly applied to a large number of bivalve molluscs, both marine and fresh water, but more correctly to the common mussel, *Mytilus edulis*, of the markets. Abundant on the rocks around the British coasts, it is found in great clusters attached by the thread-like byssus which is produced by the foot. It is an im-



Musquash or Musk Rat. Specimen of the small North American rodent extensively trapped for its fur

and the house called Pinkie House. Loretto School occupies the site of a chapel dedicated in the 16th century to our Lady of Loretto. The industries include fishing, and the making of paper, fishing nets, etc.; there are also works for making wire. Musselburgh proper and Fish-errow across the Esk, where there is a harbour for the fishing boats, are united by a bridge. The town has fine golf links and bathing facilities. An annual race meeting is held. The battlefield of Pinkie is near the town. Pop. 17,200. See Loretto; Pinkie.



Musselburgh arms



Mussel. Specimens of fresh-water species. Above, Duck mussel, *Anadonta anatina*, actual size, $3\frac{1}{2}$ ins. across; below, Swan mussel, *A. cygnaea*, actual size, $5\frac{1}{2}$ ins. across

portant food mollusc, and thrives best around the mouths of rivers, where it obtains an abundance of food; but it is liable to pollution from sewage. Seven species of fresh-water mussels occur in Great Britain, one of them—the swan mussel—sometimes attaining a width of over 7 ins. The pearl mussel occurs in the mountain streams of the N. and W. Fresh-water pearls were formerly highly valued as gems, but they usually lack the lustre and beauty of the product of the pearl oyster. See Mollusca.

Musselburgh. Mun. and police burgh of Midlothian, Scotland. It stands on the Firth of Forth, where the river Esk enters it. It is 6 m. from Edinburgh, of which it is practically a suburb, and is served by the N.B. Rly. The chief buildings are the old tolbooth, the town hall,

Musset, ALFRED DE (1810–57). French poet, novelist, and dramatist. Born in Paris, Dec. 11, 1810, the son of a war office official, he was admitted to the circle of romantics of whom Victor Hugo was the chief, and soon established himself as one of its most remarkable members. Early in 1830 he published *Contes d'Espagne et d'Italie*, which met with a cordial reception; and before the year was out his first comedy, *La Nuit Vénitienne*, was produced at the Odéon Theatre, but was not successful. The set-back was but brief, for with *La Coupe et les Lèvres*, and *À quoi rêvent les Jeunes Filles*, two short plays published in 1832, his importance as a dramatist was immediately recognized.

Two tragicomedies, *André del*



Alf. de Musset

Sarto and *Les Caprices de Marianne* followed, in 1833, and towards the close of that year he set out with George Sand (Armandine Dudevant), who was six years older, for Venice. The two writers had conceived a passion for one another, but after a few months together they separated. This episode was followed by a period of literary activity, marked by the production of some of his finest work. In 1838 de Musset was appointed librarian at the home office in Paris. A few years later he began to suffer much in health; but in 1845 published his delightful proverb play, *Il Faut qu'une Porte soit ouverte ou fermée* (first acted three years later), and in 1847 had a notable stage success with *Un Caprice*. He died May 2, 1857.

Great alike as poet, dramatist, and story writer, de Musset combined fervent passion and great lyrical genius with the finest wit and rare dramatic ability. Two years after his death George Sand published an account of her liaison with him in the form of a novel, *Elle et Lui*; to which the poet's brother Paul retorted with *Lui et Elle*. De Musset's works were published in ten volumes in 1876. See *Biographie de Alfred de Musset*, P. de Musset, 4th ed. 1877; *Correspondence de George Sand et d'Alfred de Musset*, 1904; and *French Poets and Novelists*, H. James, 1908.

Mussolini, BENITO (b. 1883). Italian statesman. Born in Romagna province of humble parentage, he went to work at an early age, but managed to acquire education in Italy and Switzerland. An ardent socialist, he edited the leading organ of socialism, *Avanti*. The Great War changed his views, and he resigned his membership of the socialist party and founded a daily newspaper, the *Popolo d'Italia*, at Milan. He fought in the war as corporal of Bersaglieri.

His organizing ability raised the new Fascismo movement formed by him to combat Bolshevism to the most powerful party in Italy, with himself as leader and dictator. He was appointed premier in 1922, and at once set about the reconstruction of Italy, and took a strong line in foreign policy, advocating territorial expansion for Italy. See *Fascisti*; Italy.



B. Mussolini, Italian statesman Vandyk

Mustagh-ata. Lofty mt. peak of W. Chinese Turkistan, an E. outlier of the Pamirs (*q.v.*). It reaches an alt. of 24,388 ft.

Mustang (Span. *mestrenco*, a strayer). Name applied to the wild horse found on the prairies of Mexico and California. They are not natives, but believed to be the descendants of horses introduced from Europe by the Spaniards at the time of their conquest in the 16th century. See Horse.

Mustard (*Brassica*). Annual herbs of the natural order Cruciferae. They are natives of Europe, Asia, and N. Africa. There are three British species known as mustards — black mustard (*B. nigra*), wild mustard or charlock (*B. arvensis*), and white mustard (*B. alba*). These are by some authors separated to constitute the genus *Sinapis*. They are bristly, branching plants from 1 ft. to 3 ft. in height, with variously lobed leaves and yellow flowers, and long rounded seed pods. In the black mustard these stand erect and close to the stem; the prefix has reference to the dark coloured seeds. In the two other species the pods stand out from the stem, and the seeds, which in charlock are brown, are in white mustard yellow.

The mustard of commerce is a mixture of the seeds of black mustard and white mustard, ground

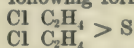
by the Germans during the later stages of the Great War, and subsequently adopted by the Allies. It was used exclusively in shell and



Mustang. Specimen of the wild horse of the Mexican and Californian prairies

By courtesy of American Museum of Natural History

trench howitzer bombs, and is actually dichloro-diethylsulphide of the following formula:



As used for the purposes of warfare it was not a pure product, but frequently contained an excess of free sulphur. It is actually an oily liquid of high boiling point, which slowly evaporates after it has been exposed to air.

The compound was probably first prepared by Riche in 1854, but the first full account of it was given to the Chemical Society in 1860, by Guthrie, who also prepared it.

On the explosion of a shell the mustard gas is distributed as a spray of fine drops. The "gas" evaporates slowly and may remain for a number of days and constantly infect the surrounding atmosphere. Its smell, which is somewhat similar to that of garlic, is not sufficiently pronounced to be readily distinguished on a battlefield, and owing to their small bursting charge the shells are frequently disregarded. The effect of this gas is two-fold, toxic and vesicant. It particularly attacks those portions of the skin which tend to be moist, as under the armpits, raising most painful blisters, whilst its irritant effect on the eyes is very marked. Splashes of liquid on the clothing may cause blisters all over the body which take weeks to heal.

The gas has a most irritant effect on the lungs if inhaled, and pneumonia frequently supervenes, occasionally with fatal results. Whilst the gas masks proved effective in protecting their wearers from the toxic action, many casualties occurred through the presence of the gas not being recog-

nized, whilst the vesicant action accounted for many men being incapacitated, as protective clothing was not devised which gave sufficient freedom of movement to carry on duty. See

Chemical Shell;
Gas; Gas Shell;
Lachrymatory
Shell; Tear Shell.

Mustard Oil
OR ALLEYL ISOTHIOCYANATE. Colourless liquid with a pungent smell, which causes a flow of tears and blisters the skin if allowed to remain on it for a short time. It is prepared from a mixture of black and white mustard seeds ground

together into a paste. This is allowed to stand for 24 hours, and then the oil is distilled off. This is, however, an oil of mustard, prepared for use as an external medicine that does not blister.

Mustelidae. Family of carnivorous mammals, comprising the weasel tribe. It includes the weasels, martens, polecats, stoats, skunks, badgers, otters, etc.

Muster-Roll. Nominal list of soldiers, used when the men answer to their names, a procedure known as calling the roll. Formerly this list, signed by the colonel, was the authority for the payment of troops, and after being duly sworn to by the paymaster, was transmitted to the Government. In spite of this care it became necessary to employ commissaries of musters to visit regiments and verify the rolls, for colonels were their own recruiters. To-day the official pay-list takes the place of the muster-roll for financial purposes, being certified by the officer commanding the company, squadron, or battery.

Muswell Brook. Town in Durham co., New South Wales, Australia. It is a road and rly. junction on the Hunter river, 75 m. by rly. from Newcastle. It is a centre for the rich vine-growing and wine-making district in the valley of the Hunter. Pop. 2,400.

Muswell Hill. Residential district of London. In the county of Middlesex, it lies to the N. of Highgate and the E. of Finchley. The name is derived from a well at the top of the hill, one of the low range running through the county. It has a station on the G.N. Rly., and in the district is the Alexandra Palace (*q.v.*).



Mustard. Foliage, flowers, and seed-pods of charlock

and mixed with wheat flour and coloured with turmeric. It is then sifted, and from the residue left in the sieve the mustard oil is obtained. This is really produced by the black mustard, but it does not develop until acted on by a principle known as myrosin supplied by the white mustard. In medicine mustard is prescribed as an emetic in cases of poisoning.

The salad mustard and cress consists of young plants of both species that have only reached the seed-leaf stage.

Mustard Gas. Popular designation for an asphyxiating and lachrymatory chemical introduced

Muswell Hill Murder. British cause célèbre. On the morning of Feb. 14, 1896, Henry Smith was found lying dead in the kitchen of his house, Muswell Lodge, N. London, and from the safe £100 in gold was missing. In the kitchen was found a toy bull's-eye lantern, the property of the brother-in-law of a man, Albert Millsome. He and an associate, Henry Fowler, were missing, and also found to have been well supplied with money after the outrage. They were traced to Bath and captured after a struggle. Millsome made a statement putting the blame for the murder and the robbery on Fowler. While awaiting the jury's verdict, Fowler made an attack on Millsome in the dock and almost murdered him. Both men were hanged.

Mut. Egyptian goddess. Forming with her consort Amen-Ra and her son Khonsu the Theban triad, her chief temple lay S. of Karnak. Mistress of the sky, she appears in human form wearing a vulture head-dress and the double crown of Egypt. See Karnak.

Mutation. Theory which accounts for the origin of species by the sudden production of permanent variations from the parent. It is founded on the experiments of Hugo de Vries, of Amsterdam, in breeding the variety *lamarckiana* of *Oenothera biennis*, the evening primrose. De Vries found this plant on waste land in Holland, where it had escaped from cultivation, and associated with it he found a number of distinct forms that had obviously been derived from it. This led him to secure seeds of the normal form, and to breed from the seedlings these produced. The results of breeding through several generations of the plants were published in 1901. His conclusion was that new forms arise suddenly—as it were by leaps—without any intermediates connecting them with the parent.

Darwin had taught that new species are built up by the slow accumulation of minute variations which are seized hold of and fixed by natural selection, if they are of importance for the perpetuation of the race. The suddenly-appearing species of De Vries—to which he gave the name mutants—are apparently what the gardener had long before termed sports, and from which he had sometimes bred. Apparently it is only certain species that produce mutants. See Botany.

Mute (Lat. *mutus*, dumb). Word used in several connotations. Primarily it denotes a person congenitally lacking the power of speech, or who has been deprived of it by long continued deafness,

then called a deaf mute. (See Deaf and Dumb.) It is also applied to a person who, though able, refuses to speak, and specifically in law to one who "stands mute."

In modern practice, if a prisoner stands mute of malice or will not answer directly, the court orders a plea of not guilty to be entered, and his trial proceeds as if he had pleaded directly. Formerly a jury was impanelled to inquire whether he stood obstinately mute, or was dumb by the visitation of God. In the latter case the trial proceeded as if he had pleaded not guilty; in the former, standing mute was equivalent to conviction if the arraignment were for treason, and the prisoner received the judgement and execution provided by statute for that crime.

An old funeral custom in Great Britain, now disappearing, was the presence of attendants supplied by the undertaker and called mutes. Wearing voluminous black cloaks and crape bands hanging from their hats, they stood outside the door of the house from which the corpse was to be brought, holding in their hands staves tied up with large black bows and streamers. These figures were survivals from ancient Roman funeral ceremonial at which black-garbed officials, called *lictors*, attended the undertaker or master of the ceremonies, called *designator*, and marched with him beside the corpse to the place of burning or burial outside the city.

In music, mute is the name of a mechanical device for softening or deadening the sound of an instrument. For stringed instruments of the violin family the apparatus is of wood or ivory, and is affixed to the bridge; while on instruments such as the piano it is a pad applied by a pedal arrangement. In brass instruments it takes the form of a leather pad inserted in the bell. The words *con sordini*, or *muto*, indicate when the mute is to be employed, and *senza sordini* when it is to be discontinued.

In philology, mute is the term applied to letters which are not pronounced, such as b in dumb, and to consonants whose sound is abruptly checked by complete closure of the vocal organs. Mutes are voiced—b, d, g—and unvoiced—p, t, k.

Mutilation (Lat. *mutilare*, to lop off). In anthropology, a bodily disfigurement effected under social sanction. Practised throughout human history, it is an artifice having an amuletic, ornamental, or useful purpose. It is prompted by self-consciousness, desire for social distinction, magico-religious or hygienic considerations, or inex-

pliable tradition, and is often attended by rigid ceremonial observances. Distinguishable from the penal disfigurement of slaves, captives, and criminals, and the austerities of religious ascetics, it is usually intended to attract, not to repel, ranking as a mode of personal enhancement or decoration.

Accomplished by removing, wounding, or deforming parts of the body, this custom affects the skin, limbs, and trunk, head, teeth, and other organs. It includes circumcision and castration. Some usages are traceable to palaeolithic Europe; others, such as ear-lobe distension, were perhaps disseminated by the mariners who carried the megalithic and early metal cultures across the world.

MUTILATION CUSTOMS. Skin-mutilations include the shaving and eradication of hair, even to the eyebrows, the raising of scars by cutting or burning, often as tribal badges, and the puncturing of designs by needle-tattooing, especially in E. Asia. Amulets may be embedded in artificial warts. Chinese ascetics affect elongated finger-nails.

Finger-joint amputation, attested by palaeolithic cave-drawings, is widely practised in aboriginal Australia and S. Africa for mourning, in Mysore as a birth-custom, now symbolically; in Tonga and Damaraland in time of sickness; and among the Mandan Indians as an initiation rite. The foot-compression of high-born Chinese women may be compared with the deformity occasioned by high-heeled shoes in Western civilization. Constriction of the waist or limbs by irremovable rings or bands, and breast elongation occur. The Nilotic Lango in E. Uganda pierce the navel for brass rings and bead ornaments.

Head-deformation has been widely practised since neolithic times. Polynesian noses are often flattened. The upper ears may have 13 punctures, as in India, or the lobes be punctured and distended until they rest upon the shoulders, as in the Solomon islands. Melanesian noses, S. American and Nyasaland lips, and Eskimo cheeks may be pierced for plugging. Bongo lips are distended, and Senegal lips artificially swollen. The tongue may be pierced, and some Saharan peoples excise the soft palate in infancy. Tooth-mutilation chiefly characterises the dark-skinned peoples.

See Circumcision; Head-deformation; Tooth-Mutilation; consult also Fashion in Deformity, W. H. Flower, 1881; Customs of the World, W. Hutchinson, 1913.

Mutiny (Fr. *mutin*, rebellious). Collective insubordination of soldiers or sailors, an offence at all times punishable by death after conviction by court-martial. In Great Britain the Army Act provides for the redress of wrongs by enabling any officer or soldier as an individual to state his grievance to the Army Council, or to a general officer, but the combined complaint of several is never permissible. A soldier cannot be punished for availing himself of his privilege to complain, even if his complaint be considered frivolous.

On the other hand, anything in the nature of a conspiracy to refuse service, or promote sedition, for any reason whatever, is deemed mutiny, and any person subject to military law who joins in it, or fails to use his utmost endeavours to suppress it, is culpable, even though the conspiracy should prove abortive. It should be noted that the term mutiny formerly included other acts of insubordination by a soldier, and thus the old Mutiny Act embraced most of the military offences now dealt with by the Army Act of 1881. *See* Army; Army Act; Mutiny Act.

Mutiny Act. Law originally passed in England in 1689 to punish insubordinate soldiers and deserters from the army by a military tribunal. The need for this became evident, when 800 men who had enlisted to serve King James II refused to embark for Holland at the bidding of William III. The duration of the Act was limited to seven months, but it was re-enacted every year with few intervals down to 1878, when its provisions were embodied in the Army Discipline and Regulation Act of 1879.

The Mutiny Act only operated in respect of troops at home, since articles of war were issued by the crown to govern troops on active service or otherwise employed overseas. The Mutiny Act, however, in 1803 became the legal authority for making articles of war, which had from Tudor times, and even earlier, been regarded solely as a prerogative of the crown, to be exercised only in time of war. As the law of the land could not be set aside in time of peace, the only help which parliament afforded the military authorities in maintaining discipline before 1689 was to make desertion punishable before a civil tribunal as a felony, apparently on the theory that a deserter had made away with a military equipment furnished at the cost of his captain. The Mutiny Act was therefore the beginning of legislation which recognized that the army in peace as in war required a special disciplinary code.

Mutsu, MUNEMITSU, COUNT (1842-96). Japanese statesman. Imprisoned for taking part in the Satsuma revolt, 1878-83, he visited Europe on his release, entered the diplomatic service, and was minister to the U.S.A., 1888-89. Minister of foreign affairs, 1892-96, he was one of the plenipotentiaries for peace with China, and later was instrumental in concluding the treaty with Great Britain. He died in Tokyo.

Mutsu-hito (1852-1912). Emperor of Japan. Born at Kyoto, Nov. 3, 1852, he succeeded his father, Oshihito, in 1867, coming to the throne at a critical time in the history of Japan. The country had just been opened up to foreigners, and among



Mutsu-hito,
Emperor of Japan

the conservative element there was considerable discontent. Mutsu-hito, however, favoured Western ideas, and cleared the way for their introduction by various measures. He abolished the shogunate, and in 1869 moved his capital from Kyoto to Yeddo, which he renamed Tokyo. Railways were introduced in 1872, the European calendar came into force, and the study of English became general. The victorious wars with China, 1894, and Russia, 1904-5, strengthened his power, which was consolidated in 1910 by his alliance with Great Britain. He died at Tokyo, July 29, 1912. *See* Japan.

Mutton (late Lat. *multo*, sheep). Flesh of sheep. It contains less protein and more fat than beef. The breeds of sheep for mutton production include Lincoln, Leicester, Border Leicester, Scotch blackface, Shropshire, South Devon, and Welsh, together with crosses from these breeds. Immense quantities of frozen and chilled mutton are imported into Great Britain, especially from New Zealand and Australia. *See* Diet; Meat.

Muttra. Dist. and town of India in the Agra division, United Provinces. The dist. is situated on both sides of the Jumna and grows wheat, barley, millet, and gram. Three-quarters of the area is tilled, and one-quarter is irrigated, the rainfall being only 25 ins. per annum.

The town, the reputed birth-place of Krishna, is an ancient sacred city on the Jumna, and is an important rly. junction. It contains many fine buildings, including the Jama Masjid, 1662, and

the Mosque of Aurungzebe, 1669. Area, dist., 1,450 sq. m. Pop. dist., 656,000; town, 54,300.

Muybridge, EADWEARD (1830-1904). British photographer. Born at Kingston-upon-Thames, his original name being Edward James Muggenridge, he emigrated to the U.S.A. and became director of photographic surveys. His first attempt at depicting motion by means of photography was in 1870, when he took a series of photographs of trotting horses, and demonstrated that the conventional idea of trotting was incorrect. In 1881 he invented the zoopraxiscope, the forerunner of the cinematograph, showing moving pictures on a screen. He made a large number of photographs of animals in motion, upon which he published works which have become standard, viz.: *The Horse in Motion*, 1878; *Animal Locomotion*, 11 vols., 3rd ed. 1907; and *the Human Figure in Motion*, 3rd ed. 1907. These works contain over 100,000 separate motion photographs. *See* Cinematography.

Muzaffar-ed-Din (1853-1907). Shah of Persia. Born March 25, 1853, he succeeded his father, Nasr-ed-Din.

in 1896. His extravagant tastes forced him to raise loans from Russia, 1898-1900, thereby rousing suspicion of Russian motives in Britain. He visited Petrograd and Paris in 1900. In 1902, he was entertained in England by Edward VII, and received the order of the garter. His continued maladministration and waste stirred up discontent until he was forced to grant a constitution in 1906. He died at Teheran, Jan. 8, 1907. *See* Persia; History.

Muzaffargarh. Dist. and town of India in the Multan division, Punjab. The dist. is situated in the S., with the Indus on the W. and the Chenab and Panjnad on the E., and terminates at the confluence of the Indus and Panjnad. The annual rainfall is 6 ins. Wheat is grown upon irrigated or inundated land.

The town stands on the right bank of the Chenab, where the rly. crosses the river, and has grown round a fort built by Nawab Muzaffar Khan. Area, dist., 6,052 sq. m. Pop. dist., 569,500; town, 4,400.

Muzaffarnagar. District and town of India in the Meerut division, United Provinces. The dist. lies between the Ganges

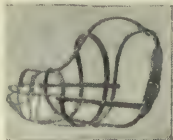


Muzaffar-ed-Din,
Shah of Persia

and Jumna N. of Meerut dist. Wheat and barley are the chief crops. The annual rainfall is 30 ins. The town is situated near the middle of the dist. and has rly. connexion with Meerut and Delhi. It was founded by Muzaffar Khan Khanjahan about 1633. Its area is 1,673 sq. m. Pop. dist., 808,000; town, 23,800.

Muzaffarpur. Dist. and town of India, in the Tirhut division, Bihar and Orissa. The dist. lies N. of the Ganges, and is mainly a flat alluvial plain drained by the Gandak rivers. Its area is 3,036 sq. m. The only limitation of human settlement is the marshes, most of which represent deserted river beds, for none of the rivers of the plain is here stable. Most of the district contains over 1,000 people per sq. m.; nearly all of it capable of cultivation, and about three-quarters is tilled. More than half the area yields two crops a year, chiefly rice and pulses. The town, built near a deserted bed of the Little Gandak river, is the divisional as well as the district headquarters, and a centre for the declining indigo industry. Pop. dist., 2,845,500; town, 43,700.

Muzzle. Properly and originally the snout, i.e. the jaw and mouth of an animal. It is also used by analogy for the mouth of a gun, and for the covering placed over the mouths of dogs or other animals to prevent them, when necessary, from eating or biting.



Muzzle for dogs. Pattern approved by Board of Agriculture

Muzzling Order. Measure adopted by public authority in various countries to stamp out rabies (*q.v.*). Although other animals are liable to the disease, dogs are its principal victims, and experience has shown that the best means of extinguishing it is compulsory muzzling within large districts, and the quarantining of all imported dogs, or absolute exclusion. In Great Britain the method was first tried systematically in April, 1897. In May, 1900, the order was rescinded, no case having occurred throughout the country since the previous Nov.

In consequence of a recurrence of rabies in Cornwall and Devon, followed by cases elsewhere in England and in Wales, the muzzling order was reimposed by the board of agriculture in April, 1919, over certain districts. In Jan., 1920, the controlled districts began to be reduced, but the order

was still in force in various scheduled areas in June, 1921, but London was freed from the order on June 30.

M.V.O. Abbrev. for Member of the Royal Victorian Order.

Mweru or **MOERO.** Lake of Central Africa. It lies W. of Lake Tanganyika and between the Belgian Congo and N.E. Rhodesia. It is 68 m. long and has an average breadth of 24 m. It is fed by the Luapula river. To the E. of the lake is the Mweru Marsh game preserve, one of the chief breeding grounds of the elephant. The lake, which is navigated by steam launches, was discovered by Livingstone in 1867. Marshes for 30 m. from the S. end indicate a greater extent in past years, and certain fish with amphibious habits, a relic of the Silurian period, attest the great geological age of the lake.

Myalgia. Literally, pain in the muscles. It is now, however, recognized that the seat of the pain in this affection is the fibrous tissue, or fascia, which surrounds the muscles, and the term "fibrositis" for the disorder is more commonly used. See *Fibrositis*; *Rheumatism*.

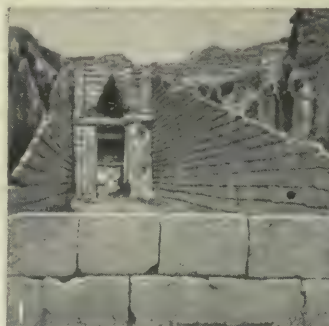
Myasthenia Gravis. Rare disease of the muscles, the cause of which is unknown. At first the muscles show fatigue after very

little action. This progresses to distinct paralysis. The condition may terminate fatally in from one to three years, but the duration in some cases is as long as 15 or 20 years. Complete and prolonged rest retards the course of the disease.

Myaung-Mya. District and town of Burma, in the Irawadi division. The dist. is on the West side of the great delta, and has an annual rainfall of 100 ins. Rice is the only crop. The town is a progressive fishery and trade centre and small port. Area, 2,642 sq. m. Pop. dist., 335,000; town, 6,600.

Mycalē. Mountain of Asia Minor, now known as the Samsun Dag. Famous for the great naval victory the Greeks won over the Persians in its neighbourhood in 479 B.C., it stands on the W. coast of Asia Minor, opposite the island of Samos. The battle put an end to Persian rule in Ionia, the islands and many towns declaring themselves independent.

Mycenae (Gr. *Mykēnai*). Ancient Greek city of Argolis in Peloponnesus. It was the centre of the so-called Mycenaean civilization, the supposed former capital of an Achaean kingdom, and the residence and burial-place of Agamemnon. In 468 B.C. it was conquered



Mycenae. Excavations in the ruins of the ancient Greek city. 1. Treasury of Clytemnestra. 2. Part of a large house, built about 1400 B.C. 3. General view from the west, with the famous lion gate in the distance

and destroyed by the Argives. In 1822 the extensive remains of the Cyclopean ring-walls with the famous Lion Gate, and of a domed building of bee-hive shape (the so-called Treasury House of Atreus, in reality a tomb), were investigated by French archaeologists. On the Acropolis (citadel) Schliemann discovered several rock-hewn graves containing an immense number of gold and silver ornaments, arms, vases, and utensils of various kinds. They appear to have been the graves of members of the royal house.

Sacrificial remains were found in abundance, and there is reason to believe that human sacrifice was practised. Later research has brought to light the remains of a royal palace on the acropolis height. Remains of private houses have yielded many objects of pottery, belonging to what is called the late Mycenaean period—the period of the palace, the Lion Gate, and the domed tombs. Researches in the royal grave circle in 1920 yielded evidence that Mycenae was inhabited at the very end of the Neolithic or the very beginning of the Bronze age. See Aegean Civilization.

MYCETOZOA OR MYXOMYCETES.

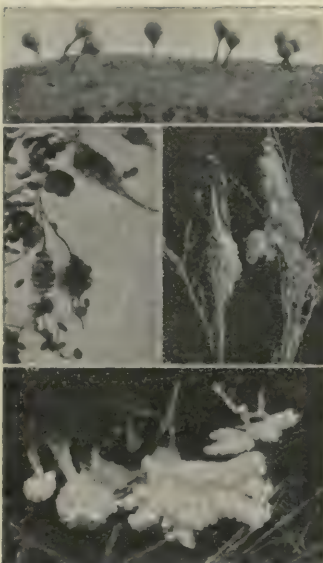
Class of organisms variously regarded as low forms of animals (Protozoa), and as slime-fungi. They live in rotten wood, decaying leaves, and similar organic waste. Beginning life as microscopic spores, they rapidly become, in moisture, amoeba-like swarm-cells that glide through the decayed material, and feed upon bacteria by enveloping them in their jelly-like substance. They multiply in this stage by division; and later vast numbers unite into a cream-like mass (*plasmodium*) that flows out to the exterior of the leaf or tree-stump.

In the swarm-cell stage they avoid the light, but the plasmodium is attracted to it. After a few hours of the flowing movements, the plasmodium invests itself in a firm crust, beneath which it breaks up into millions of microscopic spores again, lying among the meshes of a network of delicate threads (*capillitium*), some of the latter bearing knots of calcium carbonate. The spore-containing crust (*sporangia*) may be flat or cushion-shaped, or may be cylindrical or globular, mounted upon a stalk. These are the more interesting to observe: from the creamy plasmodium a number of hair-like growths extend vertically, and up these creeps a portion of the cream, arranges itself as a cylinder or a globe, and then develops the hard

crust, which may be black, brown, red or yellow according to species. Some of these are of beautiful form.

Several hundred species are known from all but the driest and coldest parts of the earth, about 150 species being British. In certain phases of their life-history they appear to be animals, in others plants; and though the majority of naturalists follow De Bary, who declared them to be "outside the pale of botany," many botanists regard them as being within the pale. See Protozoa; consult also Monograph of the Mycetozoa, A. Lister, 1911.

Mycology (Gr. *mykē*, a mushroom). Branch of botanical science concerned with the study and classification of the fungi (*q.v.*).



Mycetozoa. Specimens of organisms occupying a doubtful position between the animal and vegetable world. Top, *Trichia botrytis*. Left centre, *Brefeldia maxima*, capillitium and spores. Right centre, *Mucilago spongiosa*. Bottom, *Stemonitis fusca*, flowing plasmodium

Mycosis Fungoides. Disease of the skin characterised by the development of tumours, which may be scattered all over the surface.

Myddelton, Sir Hugh (c. 1560-1631). English capitalist. Born at Galch Hill, Denbighshire, he came



Sir Hugh Myddelton, English capitalist

to London as a youth and became a goldsmith and banker in Basinghall Street. Sundry profitable ventures in the New World enabled him to contract

with the corporation of London for making a river to supply the city with water from Ware, 1609. This he successfully executed, but nearly ruined himself in the undertaking. The New River, as it was called, was opened in 1613, and Myddelton was made a baronet. Subsequently concerned in other ventures which restored his fortunes, he died Dec. 10, 1631.

Mydriatics. Drugs which cause the pupil to dilate. Those most frequently used in medicine are atropine and homatropine. Drugs which contract the pupil are called myotics.

Myelitis (Gr. *myelos*, marrow). Inflammation of the spinal cord. Acute myelitis may be due to exposure to cold and wet, fracture or injury of the spine, or may be a complication of infectious diseases, such as typhus and small pox. The condition may also arise from extension of disease of the vertebrae, such as caries, or may occur in the course of syphilis. The onset of acute diffuse myelitis may be marked by chills and rise of temperature. Paralysis rapidly develops, first in the legs, and in the arms, if the upper part of the cord becomes involved. The muscles waste rapidly, and delirium and high fever terminate in death. In acute transverse myelitis only a section of the cord is involved, and the symptoms vary with the site of the inflammation.

Myers, Frederic William Henry (1843-1901). British man of letters. He was born, Feb. 6,

1843, at Keswick, and educated at Cheltenham College and Trinity College, Cambridge. After a brief period as college lecturer he became an inspector of schools. Of



F. W. H. Myers, British man of letters
Elliott & Fry

his poems *The Renewal of Youth*, 1882, is probably his finest effort. In later life he became interested in spiritualistic phenomena, and was an original member of the Society for Psychical Research. The results of his psychic studies are embodied in several publications, notably *Human Personality* and its *Survival of Bodily Death*, 1903. Myers died at Rome, Jan. 17, 1901. Before his death he agreed to make every effort to communicate with his friends of the Psychical Research Society from beyond the grave, and it is claimed that several messages have been received. See Psychical Research.

Myingyan. Dist. and town of Burma, in the Meiktila division. The dist. is situated on the left bank within the curve of the Irawadi and N.E. of the Pegu Mts. Oil seeds are the chief crop. The town is a railway terminus on the left bank of the Irawadi. Area 3,107 sq. m. Pop. dist., 442,000; town, 16,400.

Myitkyina. Dist. and town of N. Burma, in the Mandalay division. The town is situated on the Upper Irawadi more than 250 m. N.N.E. of Mandalay, with which it is connected by rly. It is a rly. terminal on the right bank of the Irawadi, of which it is the limit of navigation. The area of the district is 10,977 sq. m. Pop. dist., 85,600; town, 5,700.

Mylitta. Goddess of Babylonian mythology, associated with love and fruitfulness. Herodotus records that her worship claimed special rites from every woman at some time in her life.

Mylius, EDWARD. Sentenced, Feb. 1, 1911, to 12 months imprisonment for publishing a seditious libel in leaflets called *The Liberator*, to the effect that King George V had been married in 1890 to the daughter of an admiral in Malta, and that therefore his marriage in 1893 to Queen Mary was a bigamous one. The admiral in question and his daughter gave evidence of the absolute baselessness of the allegation, which Mylius was quite unable to substantiate by any evidence.

Mylius Erichsen Land. That part of N. Greenland lying S. of Heilprin Land, E. of Peary Land, and bounded N. and E. by Wandel Bay and Denmark Fiord, in lat. 80° to 82° N. It was named after the Danish explorer, who penetrated here in 1906.

Mylonite. In petrology, a rock which has been crushed by earth movements so as to lose its original structure. Most mylonised rocks are quartzose, and are found in regions of metamorphism. Typical examples of mylonite are found in the N.W. of Scotland.

Mynn, ALFRED (1807-61). English cricketer. Born at Goudhurst, Kent, Jan. 19, 1807, he joined the Harrietsham, Kent, cricket club in 1825. He played at Lord's in 1832, and became one of the chief cricketers in the country. A stalwart of the Gentlemen, he helped in their victories over

the Players between 1840-50, and played regularly for Kent almost up to his death. As a fast round-arm bowler Mynn had no equal, whilst his batting, though not so brilliant, was good. He died Nov. 1, 1861. See Cricket.

Mynyddislwyn. Urban dist. of Monmouthshire. It is 8 m. S.W. of Pontypool, and stands on the coalfield, its industries including iron, tinplate, and chemical works. There are quarries in the neighbourhood. The council supplies gas and electricity. Pop. 10,000.

Myocarditis (Gr. *mys*, muscle, *kardia*, heart). Inflammation of the muscle substance of the heart. See Heart.

Myopia (Gr. *myops*, short sighted). Short sight. It is an error of refraction most commonly due to abnormal elongation of the eyeball, with the result that parallel rays are brought to a focus in front of the retina, and vision is accordingly indistinct. Only divergent rays are focussed on the retina, and in consequence short-sighted persons find it necessary to hold an object closer to the eye than do normal persons. See Eye.

Myosin. Proteid produced by muscle plasma after death. The muscle plasma separates into a serum and a clot, the latter being myosin. It is this occurrence in the muscles of the body after death which causes the phenomenon known as rigor mortis (*q.v.*). Myosin is contained in brine which has been used for pickling meat, and it can be prepared from flesh after the removal of albuminoids.

Myriapoda. Sub-class of the arthropoda, which includes the centipedes and millipedes (*q.v.*).



Myriapoda. Giant centipede of S. America, *Scolopendra gigas*. Above, common millipede
W. S. Burridge, F.Z.S.

They have long, segmented, cylindrical, or flattened bodies, and each segment is provided with paired limbs. The animals are notable for the great number of their legs, though not so numerous as their name suggests. There are

a great number of species, distributed over the tropical and temperate regions of the world. Great Britain has several, all of which are small and harmless.

Myricaceae. Small natural order of shrubs and trees. Natives of Europe, Asia, S. Africa, and N. America, they have alternate and undivided leaves, often covered with a wax-secreting down. The male and female flowers are distinct, in separate spikes, and without sepals or petals; the males consisting merely of stamens, and the females of the one-celled ovary and two thread-like styles. The fruit is compressed on two sides, and contains a single-seeded stone. The species yield fragrant wax, benzoic acid, and tannin. See Sweet Gale.

Myrmidons. In Greek legend, the Thessalian tribe of which Achilles was king. Achilles brought them to Troy, and withdrew them from the fighting when he quarrelled with Agamemnon. Their unqualified devotion to Achilles has caused the term myrmidon to be taken as the type of unquestioning obedience.

Myrobalani Emblica (*Phyllanthus emblica*). Tree of the natural order Euphorbiaceae. A native of India and Malaya, its alternate leaves are slender, and arranged in two ranks along the twigs. The small green flowers have the sexes separate, and are clustered. The small, acid, fleshy fruit contains a hard nut with six seeds. The fruits are eaten raw, or preserved with sugar as a sweetmeat. The bark is used in tanning and dyeing. The wood is hard and damp-resisting.

Myrobalan Plum or CHERRY PLUM (*Prunus cerasifera*). Shrub of the natural order Rosaceae. Its native country is uncertain, but is probably the Caucasus. The branches are not spiny; the leaves are elliptical, the flowers white, and the fruit round and red, with yellow flesh. It is much used for making hedges.



Myrobalan Plum. Spray of foliage and fruit. Inset, single flowers



Alfred Mynn, English cricketer

Myron (5th century B.C.). Greek sculptor. Born at Eleutherae in Boeotia, he was a pupil of Ageladas of Argos. Specially known as a worker in bronze, he chose for his subjects athletes and animals. His chief characteristics were truthfulness to nature, and active rather than passive representation. His most famous works were the Discobolus, Ladas the Runner, a Satyr (probably Marsyas), and a bronze cow. The last was remarkable for epigrams inscribed upon the animal's body after the manner of the so-called statue of Pasquino at Rome. See Discobolus; Greek Art; Ladas; Pasquinade.

Myrrh. Gum resin obtained from the stem of *Balsamodendron* or *Commiphora Myrrha*. Growing in Arabia and Abyssinia, it is used occasionally in medicine to excite the appetite and stimulate the flow of gastric juice. Tincture of myrrh is also used. Myrrh may be a useful constituent of mouth washes and gargles for a relaxed throat. The tree is small, with grey bark, from which the myrrh escapes in yellow oily drops, darkening in colour as they harden.

Myrrh was used in the East as a perfume, and also for embalming. It was one of the gifts made by the magi to the child Jesus Christ, and on this account the custom exists of offering gold, frankincense, and myrrh every year on the feast of the Epiphany. The offering is made on behalf of the British sovereign in the Chapel Royal, London. See Frankincense; Magi.

Myrtaceae. Natural order of trees and shrubs, mostly natives of the tropical regions. They have undivided leaves, and flowers with four- or five-parted calyx and four or five petals. It is a very large order, comprising over 70 genera and about 2,000 species. Among well-known genera are *Eucalyptus* and *Myrtus*, of which the well-known Myrtle (*M. communis*) of S. Europe serves as a type.

Myrtle (*Myrtus communis*). Evergreen shrub of the natural order Myrtaceae (q.v.), native of W. Asia, but long naturalised in S. Europe, whence it was introduced to Britain in 1597. It grows to a height of 10 ft., has shining oval opposite leaves, and fragrant white flowers largely used in perfumery. The purple berries also are fragrant; they are sweet and have a strong aromatic flavour. In the extreme S. of England the myrtle is hardy and can be grown out of doors; elsewhere it needs protection in winter. It may be grown from seeds or cuttings, taken in early summer, and grown in a



Myrtle. Foliage and flower spray of the evergreen shrub

compost of sandy loam and leaf-mould. Myrtle wreaths were used among the ancients to crown the victors in athletic games.

Mysia. Ancient country of Asia Minor. Lying between the Aegean Sea, Propontis, Bithynia, and Lydia, it sometimes included the Troad. Its inhabitants, the Mysi, whose origin is doubtful, first appear in history when their country passed under the dominion of Croesus, king of Lydia, in the sixth century B.C. With the overthrow of the latter by the Persians, Mysia became part of the Persian empire, and after the death of Alexander the Great in 323 B.C., part of the kingdom of Syria. In 133 the country became part of the Roman empire.

Myslowitz. Town of Silesia. It stands on the Przemsza, 13 m. by rly. E.S.E. of Königshütte on the coalfield. Its industries are coal-mining, zinc refining, flax spinning, and brickmaking. In the 1921 plebiscite there was a majority for union with Germany. Pop. 18,000. See Silesia.

Mysore. Native state of S. India. It is roughly a triangle on the Deccan plateau, with Bombay on the N.W., Coorg on the S.W., and the Madras Presidency elsewhere. On the average 2,000 ft. alt., high hills, called droogs, rise in isolation from the plain; a ridge across the middle of the state separates the drainage of the Kistna from that of the Cauvery. Much land is irrigated from the Cauvery; the chief crop is ragi, a native millet; other crops are cotton, sugar cane and rice. Gold is mined at Kolar and manganese in Shimoga. Mysore

city is the capital, and Bangalore the largest town.

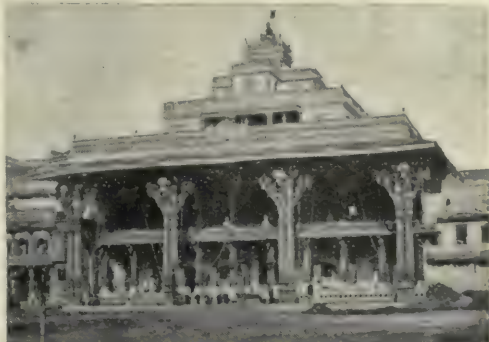
From 1760 to 1799 the state was ruled by a Mahomedan usurper, Haider Ali and his son Tippos. The British restored the former Hindu dynasty in 1799, took over the administration 1831-81, and set up a Hindu maharaja. Area, 29,444 sq. m. Pop. 5,806,000. See Madras.

Mysore. Capital of Mysore state. It is situated near the Cauvery, 100 m. S.W. of Bangalore, with which it is connected by rly. There are numerous modern buildings, including the Victoria Jubilee Institute and the palace of the maharaja. S.E. of the city is temple-crowned Chamundi Hill, 3,489 ft., with a colossal recumbent figure of the sacred bull Nandi. The city was the capital from early times until 1610. It was then superseded by Seringapatam until 1799, when the court again moved to Mysore. Pop. 68,100.

Mystagogue. Official charged with important duties in the celebration of the Eleusinian mysteries (q.v.). These *mystagogoi* were licensed by the state.

Mystery (Gr. initiation). Secret rite. The Greek word *mysteria* denoted rites performed in the presence of persons prepared by gradual initiation, under a bond of secrecy. They probably grew out of primitive ceremonial dances associated with the pre-Hellenic nature-worship of Thrace. Their chief centre was at Eleusis (q.v.).

A second group, perhaps Pelagian, seems to have spread from Thrace to Lemnos and Boeotian Thebes. These mysteries were concerned with the deified shades called Cabiri, and included the ritual slaying of an animal victim. At Andania in Messenia the mysteries combined the veneration of Demeter with that of the Cabiri. These Cabirian rituals were often confused with two others, those of the Cretan Curetes, which were essentially puberty rites, and those



Mysore, South India. Principal entrance of the former palace, destroyed by fire

of the Phrygian Corybantes, which were ceremonial dances symbolising death and burial as magical incentives to fertility.

A third group was concerned with Orpheus, himself perhaps of Thracian birth. With his veneration Greece associated the refinements of melody and poetry. In these Orphic mysteries the idea of recurrent death and resurrection was symbolised, and the ritual phenomena bore relationships to those which centered about the Egyptian worship of Isis and Serapis, and the Phrygian worship of Attis and Cybele. At the beginning of our era these mysteries were practised throughout the Greco-Roman world by the private members of secret societies, side by side with those of the Persian Mithras. All of them were for centuries engaged in a life-and-death struggle with the Christian faith.

In the N.T. the word *mystery*, as used by S. Paul, denoted the Divine plan, and there is reason to doubt whether the apostle referred directly to, or was personally familiar with, any of the mystery-religions of his time. In a later age the early fathers began to draw comparisons between Christian and pagan mysteries. But the resemblances with Christian practice observable in the later forms of the oriental cults prevalent in the Roman world, notably those of Isis and Mithras, are mainly explicable as imitations and not precursors of Christian institutions.

The religious mysteries already discussed are a special development of a social institution of widespread occurrence, and arose out of the emotional life of settled agricultural peoples. The main elements—purification, offering, procession, song, dance, drama, secret formula, and mechanical accessories—are so universal that these rituals must be deemed to have their roots in neolithic culture. They sometimes occur as modes of admission into general society, as in the case of primitive puberty-rites, and sometimes as devices for securing the local or specialised interests of artificial social groups. Thus the daubing of initiates with clay, characteristic of some Greek mysteries, is still practised in W. Africa, Guiana, Australia, Melanesia, and the Andamans, while the scope of the mystic bull-roarer (*g.v.*) is wider still. See Eleusinia; Freemasonry; Initiation; consult also The Cults of the Greek States, L. R. Farnell, 1896-1909; Primitive Secret Societies, H. Webster, 1908; St. Paul and the Mystery-Religions, H. A. A. Kennedy, 1913.

E. G. Harmer

Mystery of Edwin Drood, THE. Novel by Charles Dickens. It was to have run into twelve monthly parts, illustrated by Luke Fildes, R.A., but the author died on the day on which he completed (or all but completed) Part VI, June 9, 1870. Ever since discussion has been active as to who murdered Edwin Drood, whether Drood was murdered, who was Datchery, and similar points in this grim story of an uncle's jealousy, the qualities of which have been eagerly discussed by admirers and critics alike. Of plays founded on the novel, one by W. Stephens, was produced as early as Nov., 1871, but the most notable is that by J. Comyns Carr, first witnessed at Cardiff in Nov., 1907, and then in London, Jan., 1908, with H. Beerbohm (later Sir Herbert) Tree as Jasper. Carr's solution was that Drood was not murdered, but that Jasper had an opium-inspired dream, on waking from which he was convinced he was his nephew's slayer. The Cloisterham of the story is Rochester.

Mystery Play. Type of religious drama in medieval Europe. It was so called either as representing mysteries of the faith, or more probably as being a ministry or craft. Medieval plays with biblical subjects are commonly called mysteries. The medieval drama was evolved from religious ritual. To the recitation of sacred narratives and antiphonal singing were added at the great church festivals quasi-dramatic dialogues and symbolical acts. By the 12th century the clergy and choirs performed dramas in French churches.

From the churches the dramas were transferred to the churchyards and to open spaces in towns, and when in 1210 the clergy were forbidden to act except in churches, the performances were given by laymen. A great impetus was given to the movement by the institution in 1311 of the Corpus Christi festival on the Thursday after Trinity. The guilds in English and continental towns collaborated in producing cycles of plays representing sacred events from the Creation to Doomsday. Comic relief was provided by Noah's wife, the shepherds of Bethlehem, and other stock characters.

Of the extant English cycles, the oldest are those of Chester (24 plays) and York (48), dating from about 1350. The 32 so-called Towneley mysteries were probably acted at or near Wakefield. The 42 Coventry plays seem to have been written for monks or friars. Some mystery plays in the Cornish language are also preserved. The re-

ligious drama lingered in England until the end of the 16th century.

In many continental countries examples of mystery plays abound. In Paris the representations were restricted to the confraternity of the Passion. The Scandinavian reformers encouraged the art, which was widely practised in Germany until its prohibition by the archbishop of Salzburg in 1779 was followed by that of other prelates of the empire, the inhabitants of Oberammergau alone obtaining permission to perform a passion play. Similar dramas are still acted in Spain, and at Bruges and Furnes in Belgium. See Drama; Miracle Play; Oberammergau.

A. B. Gough

Mysticism (Gr. *myein*, to close the eyes). Term originally used in connexion with the Greek mysteries; a mystic was one who had been initiated into the esoteric knowledge of divine things which the mysteries imparted to their converts. The word is used in modern times in different senses, but in its technical meaning it has been defined by Dean Inge as "the attempt to realize the presence of the living God in the soul and in nature, or more generally as the attempt to realize in thought and feeling the immanence of the temporal in the eternal and the eternal in the temporal." All the mystics claim the power of immediate approach to God without the aid of any external means.

Traces of mysticism are to be found in most religions. The spirit of mysticism has left its mark upon the Upanishads and the Hindu philosophical schools. In Islam it appears in Sufism. In Greece its origin may be traced to Plato, though its development was due to oriental influences connected with the Greek mysteries; it reached its climax in Neo-Platonism, especially in the writings of Plotinus.

Christianity has always been a favourable soil for the growth of mysticism. There are mystic elements in the N.T., particularly in the Johannine and Pauline literature. It was not, however, till the fifth century that the movement assumed large proportions. The writings of Pseudo-Dionysius are an attempt to transform Christianity under the influence of Neo-Platonism into mysticism pure and simple, and exercised a remarkable influence on Christian thought for several centuries.

The golden age of Christian mysticism falls within the period A.D. 1250-1500. It originated in a Pantheistic society which flourished in the 13th and 14th centuries, known as "The Brethren of the Free Spirit." The watchword of

this society was "All that is in God"; man and God were therefore always in intimate association: in fact, it was hardly possible to distinguish between them. Out of this society came Meister Eckhart, 1260-1329, one of the most remarkable of the German mystics. Eckhart's mysticism is of a pronouncedly pantheistic type. "God is not the highest being," he says, for "he is the only being. Outside of God there is nothing but illusion and deception." Gradually, however, mysticism separated itself from Pantheism owing largely to the influence of John Ruysbroek, 1293-1381, who has been called "the Patriarch of the German mystics."

But the most influential of the mystics was John Tauler (1290-1361), who succeeded in severing mysticism from all its Pantheistic connexions, and bringing it into line with orthodox Christianity. Hitherto mysticism had been largely contemplative, and had shunned the practical life. Tauler showed that mysticism was worthless, unless it issued in consecration of character and life. Two societies were founded in Germany to popularise mysticism: (1) The Friends of God; (2) The Brethren of the Common Lot; both of which were instrumental in preparing the way for the Reformation.

Thomas à Kempis was connected with the latter society, and though the Imitatio Christi cannot perhaps be called mystical in the technical sense of the term, it was written under the spell of the teaching of the mystics. Another product of the same school of thought was the *Theologica Germanica*, a book which had a unique influence at the time, and did almost as much as the Imitatio Christi for the recovery of spiritual religion in Germany. In the 16th century there was a powerful resurgence of mysticism in Roman Catholicism, particularly in Spain. The chief leaders of the movement were S. Teresa, S. Juan, and Molinos, who carried to completion the work of S. Catherine of Siena. S. Catherine is the heroine of Baron von Hügel's book on Mysticism, and his delineation of her character is the best exposition of the part which mysticism played in the devotional life of a devout and orthodox Catholic. In France, too, mysticism found expression in the writings of Fénelon, Bossuet, Madame Guyon, and in Jansenism.

Roman Catholicism has always been more favourable to mysticism than has Protestantism, though the latter has by no means been untouched by its spirit. Jacob

Boehme was the first great Protestant mystic, and it was from his writings that William Law first introduced mysticism into the English Church. It cannot be said, however, that mysticism has ever been a power in English life, though it found strong advocates in the Cambridge Platonists. Quakerism, with its doctrine of the Inner Light, and Methodism with its insistence on the need of personal assurance of salvation, have, of course, their points of affinity with mysticism, but the movement has never gripped the soul of England.

H. T. Andrews

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MYTHOLOGY: GROWTH AND INTEREST

E. S. Hartland, LL.D., Author of *Ritual and Belief*

This general sketch is supplemented by articles on the figures of mythology, whether Greek, Scandinavian or other, e.g. Balder; Jupiter; Neptune; Odin; Siva; Thor; Venus; Vishnu. See also Fairy; Folklore; Rig-Veda; Valhalla, etc.

Mythology may be defined as comprising the sacred stories of the various peoples of the world. Of these stories some relate to the Creation, and to divine or superhuman beings, their genealogies, activities, and adventures, whether they are believed to have originated the world, or mankind, or a particular tribe, rank, or family, or to superintend or take part in its government, to be concerned in its well-being, to be hostile to it, or to lead a life of their own more or less apart from mortals.

Other stories relate to saints or heroes who have championed mankind or conferred benefits, who have undergone sufferings, made discoveries or inventions, or moulded the earth or its inhabitants into their present form. Among such stories are included those of the origin of death, the gift of fire, the deluge, the origin of beast and bird and tree, or their peculiarities, the organization of society, and of various institutions and customs. Many stories are aetiological, i.e. are told for the purpose of explaining these and other things; many, on the other hand, simply narrate what passes with an uncultured or half-cultured people for history. They are often connected with the worship of the gods, are told to explain the festivals, the ceremonies, the forms of their images, the position and furniture of their temples. In a word, they are sacred.

Unlike some non-sacred tales they are told as true, and wild and repulsive or impossible as they may be, they are believed, or were at

Mytens, DANIEL (c. 1590-1642). Dutch painter. Born at The Hague, he was influenced by Miereveldt and Rubens, came to London. 1618, and was made painter to Charles I, 1625. After Van Dyck's arrival he returned to Holland in 1630, and died in 1642.



Daniel Mytens,
Dutch painter
After Van Dyck

His best works include Hudson, the Dwarf, with a dog, in St. James's, Charles Howard, Earl of Nottingham, at Hampton Court, Charles I, and Henrietta Maria in Buckingham Palace. See Hamilton.

one time believed, as facts. Another characteristic frequently, but not universally, present is that they are told only under special conditions, or at a certain time of year, or in connexion with certain rites, or to certain classes of persons, as the initiates into a cult or mystery. The scientific collection and criticism of these stories is called the science of mythology.

Myths take their rise very low down in culture. The people has not yet been discovered so savage as to be destitute of myths. As culture advances, one incident after another becomes incredible to the growing intelligence, or repugnant to the more refined manners and morality of the community, but the old stories are still piously repeated by the backward classes or the priests of the local shrines. Again, the myths deemed derogatory to the divinities are denounced as lies; or they are interpreted as parables.

All these methods were tried in Greece. From Theagenes of Rhegium, and Metrodorus, in the 6th century B.C., down to Porphyry, and the latest age of paganism, the interpretation of the gods as physical phenomena was a favourite teaching. The modern explanation that myths are a disease of language, that seeks their explanation in questionable etymologies and blunders of meaning, was anticipated by Plato.

Ultimately Christianity was victorious over paganism throughout the Roman empire. The official theory of the conquerors was that the heathen divinities were devils,

and their stories lies, or a mere parody of the facts preserved in Holy Writ. At the revival of Learning the cudgels were taken up by learned men on behalf of the Greek mythology. In fact, even during the Middle Ages, when the gods of the heathen had ceased to be serious competitors for belief with the denizens of the Christian Olympus, the theory that they were devils proportionately weakened, and men reverted to the explanation that their stories were parables, an explanation exploited for the purpose of Christian instruction in the *Gesta Romanorum* and other collections of tales. Bacon in *The Wisdom of the Ancients* after the Reformation attempted to revive this method of exposition; but its difficulties were such that no two interpreters agreed on the same explanation. More recently the Euhemeristic theory has been taken up by Herbert Spencer, and after him by Grant Allen in *The Evolution of the Idea of God*, 1897. It is relevant to observe that, if every divinity were resolved into the shade of a human being, the problem of the origin and meaning of the mythical tales told every where on all sorts of themes would remain as puzzling as ever.

Interpretation of German School

The adherents of another school influential in the 19th century sought the answer to the question from philology. From Germany this method of interpretation spread wherever learned men expounded philology. In England Max Müller laid down "that the best solvent of the old riddles of mythology is to be found in an etymological analysis of the names of gods and goddesses, heroes, and heroines." Accordingly, he set himself to investigate and interpret the names. Philology as a scientific study was the result of acquaintance with Sanskrit, the eldest of the family of Aryan tongues, and in the *Rigveda*, the earliest Sanskrit literature, the philological school of mythologists thought they had found the explanation of the names and activities of the Aryan gods and the meaning of Aryan mythology.

Taking the *Rigveda* as his starting-point, Max Müller tells us: "The beginning of mythology came from a poetical and philosophical conception of nature and its most prominent phenomena; or, if poetry and philosophy combined may claim the name of religion, from a religious conception of the universe."

There are other elements taken up into it as it developed, but this is the beginning, the foundation. It is discovered by an examination of

the names and epithets of the gods and of the deeds ascribed to them, and then by equating the names with names of gods and other words in the sister tongues. Many of these equations are contested; it is probably not going beyond the facts to say that most of them are quite uncertain. When the *veda* was carefully examined, the myths were practicably resolvable into two: that of the conquest of the darkness of night, and that of the breaking of the prison of the rain.

But the time came when people could no longer accept the dogmatism of the philologists. It became incredible that the gods of the Aryan-speaking nations (and they were the only ones the philologists seriously attempted to explain) were due to "a disease of language," and one of the things that made it incredible was the wearisome monotone of the results.

Müller controverted by Lang

Insurrection broke out first in Germany, while in Great Britain the researches and example of Tylor, Lord Avebury, and J. F. Maclennan had prepared the way. Andrew Lang declared war in a number of essays, culminating in *Myth, Ritual and Religion*, published in 1887. In those works he proved that the irrationalities of Greek and Hindu myths were phenomena common to savage myths everywhere, and that they arose out of a condition of mind known to exist everywhere among savages. He recognizes two elements in all mythologies—"the factor we now regard as rational, and that which we moderns regard as irrational."

The savage and the ancestors of civilized people were on a par, which means that the ancestors of civilized people were once savages, as even the Greeks admitted. They endowed all external things with their own self-consciousness. The lower animals, trees, rocks, only differed from men in shape, save that they were often vastly stronger and vastly cleverer. The savage knew not the bounds of this cleverness; he had no standard save his imagination and his fears by which to measure it. Naturally, therefore, his belief extended to the grotesque and the impossible. Shape-shifting was accepted as a matter of course. The superhuman personages of his imagination wore the shape of beasts, either permanently or at will.

In the lower culture everywhere many men believe themselves possessed of extraordinary powers; and all men, if they do not believe it of themselves, believe it of some. Nay, they believe that, if not

themselves magicians, at least they can by means of word and rite appropriate and exercise many extraordinary powers; they can work their will by spell or amulet. The gods and heroes are endowed with the passions of men, with the powers attributed to at all events some men; but both passions and powers are idealised and magnified indefinitely.

Not that these are the sole elements of which myths are made. They are merely the groundwork of mythology—they, and not hyperboles of poets, disease of language, misinterpretation of current expressions. Such causes perhaps play their part too; but it is a small one. Other subordinate causes are distorted or imperfect recollections of facts, the cluster of traditions about a great name, the complications of organized society, and the abiding aetiological impulse which we strive laboriously to satisfy by methodical scientific inquiry, but which in that childlike condition is stayed by a tale.

Lang's work had an immediate and profound effect. In Britain at all events the philological theory of mythology was killed. The anthropological method, which explains mythology not by a disease of language, but by the universal characteristics of the mental condition of the lower culture, was accepted by all serious students.

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Mýto Vysoké. Dist. and town in the Bohemian portion of the republic of Czechoslovakia. The town is 91 m. by rail E. of Prague, and is an important road junction on the route which follows the valleys parallel with the Sudetes mts. Pop. dist., 45,000; town, 9,500.

Myxoedema (Gr. *myxa*, mucus; *oedema*, swelling). Disorder due to diminution or loss of function of the thyroid gland, an organ situated in the front of the lower part of the neck. It is more common among women than men. See Cretinism.

Mzensk OR MTSENSK. Town of Central Russia. It is in the government, and 30 m. N.E., of Orel, on the river Zusha and the Moscow-Kursk railway. Pop. 15,000.



N. Fourteenth letter of the English and Latin alphabets, one of the nasal consonants. In the combination *ng* it has a marked nasal sound in words like *king*, *sing*, to some extent comparable with the sound heard in the French *mon*, *non*. Otherwise it is pronounced as in *can*, *neck*. It is mute at the end of words after *m*, as in *column*, *hymn*, *solemn*. See Alphabet; Phonetics.

Naas. Urban dist. and market town of co. Kildare, Ireland. It stands on the G.S. and W. Rly. and the Grand Canal, and near the Liffey, 20 m. from Dublin. It is supposed to have been the capital of the kings of Leinster, while after the English conquest it had a castle and an abbey, and was represented in the Irish Parliament. Near is PuncHESTOWN (*q.v.*). Market days, Mon. and Thurs. Pop. 4,100. *Pron.* Nace.

Näås. Village of Sweden, in the län or govt. of Göteborg, 20 m. by rly. N.E. of the seaport of Gothenburg, it is the seat of the Abrahamson school of handicrafts.

Nabeul. City in the N.E. of Tunisia renowned for its manufacture of perfumes and essences. It is situated in a fertile district producing oranges, lemons, and flowers, which are grown for the European markets. Pop. 11,000.

Nabha. Native state and town of the Punjab, India, and one of the Phulkian states. The state has an annual rainfall of 18 ins. and

grows native food grains. The town was founded in 1755 by Hamir Singh. Since irrigation has been in use from the Sirhind Canal the soil has become waterlogged and the town unhealthy. Area 928 sq. m. Pop. state, 249,000; town, 13,600. See Phulkian States.

Nablus OR NABLOOS. Town of Palestine, 28 m. N. of Jerusalem. As Shechem, it is frequently mentioned in the O.T. Abimelech, the son of Gideon, destroyed the city; later it was rebuilt, and became the capital of Jeroboam, but was eventually deserted. Vespasian built a new town on the site, and called it Flavia Neapolis, the modern title being a corruption of the second word. According to tradition Jacob was buried in Shechem, and Jacob's Well is shown near Gerizim. It was a holy city of the Samaritans, and the birthplace of Justin Martyr. Before the Great War Nablus was a fairly flourishing town, with a mixed pop. of about 20,000. During the Great War the Turks, after their surrender of Jerusalem, fortified it as a military base. In Sept., 1918, it was taken by Allenby. See Palestine, Conquest of; Shechem, Battle of.

Nabob. Title given to the Great Mogul's viceroys, and generally to native rulers and persons of rank in India. In the 18th century nabob was used in England of one who ostentatiously spent a fortune made in the East. It is a corruption of the Hindustani *nawab*.

Nabonidus. Last independent king of Babylon. A usurper of priestly descent, he devoted himself to temple restoration and re-

search, incidentally seeking for and dating the foundation deposits of earlier monarchs. See Babylonia.

Naboth. Jezreelite who owned a vineyard adjoining the palace of Ahab. When he refused to part with it, Jezebel secured it by causing Naboth and his sons to be executed on a false charge of blasphemy (1 Kings 21). See Ahab.

Nabua. Town of Luzon, Philippine Islands. In the prov. of Ambos Camarines, it stands near the river Bicol, 21 m. S. by E. of Nueva Cáceres, with which it is connected by rly. Pop. 19,500.

Nacelle. Aeronautical term for the body of an aircraft. It usually refers to a body used solely to accommodate the crew and the power plant, and not forming part of the aeroplane structure proper. See Fuselage.

Nachtigal, GUSTAV (1834-85). German explorer. Born Feb. 23, 1834, at Eichstedt, Germany, he qualified in medicine at Halle, and in 1869 was sent on a mission to the Sultan of Bornu. Thence he explored Lake Chad and the Shari river, traversed Wadai, and made his way back to Cairo in 1874. Ten years later he was sent by the German government to the W. coast of Africa and explored those parts of Togoland and Cameroons which were eventually annexed by Germany. He died April 20, 1885.

Nación, LA. Daily newspaper of Buenos Aires. It is printed in Spanish, and shares with its rival, *La Prensa* (*q.v.*), the greater part of newspaper circulation and influence in Argentina. Founded by Bartolomé Mitre, one of the heroes of the republic, its control



Naas arms

remains in the hands of his family. In Jan., 1919, the editor, Jorge A. Mitre, visited England in connexion with the formation of a London office, which he hoped to make the unofficial consulate. At this time the paper carried a cable news service costing £6,000 a month, and the exclusive rights for S. America of the services of The Times (London), The New York Times, and The New York World. During the Great War La Nación was pronouncedly pro-Ally.

Nadia or **NABADWIP**. Dist. and town of Bengal, India. The dist. is a part of the Ganges delta, and the govt. maintains channels for steamer navigation in the Bhagirathi, Bhairab, Jalangi, and Matabhanga rivers. Rice and jute are grown. The town is on the Bhagirathi or Upper Hooghly, 55 m. N. of Calcutta. Area 2,790 sq. m. Pop. dist., 1,618,000; town, 12,500.

Nadiad. Town of India, in Kaira dist. Bombay Prov. It is a rly. junction on the line from Baroda to Ahmadabad. There is considerable trade in tobacco and ghi. A cotton mill provides some employment. Pop. 27,100.

Nadir. In astronomy, the point of the celestial sphere directly beneath the observer, i.e. exactly opposite to the zenith (*q.v.*).

Nadir (1688-1747). Shah of Persia. Born in Khorassan and named Nadir Kuli, at the age of 17 he was captured by the Uzbek Tartars, escaping after four years' captivity. After many wild adventures, in 1726 he entered the service of Tahmasp II, Shah of Persia, whom he deposed in 1732, proclaiming himself regent for the minor Abbas III. He carried out successful campaigns against the Russians and Turks, and on the death of Abbas, 1736, seized the Persian throne. Victorious against Afghanistan and Bokhara, he invaded India, attacked the Great Mogul, seized Delhi in 1739, carried away the Koh-i-Nur diamond and the Peacock throne, and put over 30,000 of the inhabitants to the sword. He was assassinated at Fethabad, June 19-20, 1747.

Nadson, SEMION YAKOVLEVITCH (1862-86). Russian poet. Born in St. Petersburg, of Jewish birth, at the age of 20 he published a volume of poems, which was severely attacked by some critics, but met with a popular success hitherto

unknown in Russia. In 1884 he obtained work on a St. Petersburg weekly paper, but two years later died of consumption at Yalta. His poetry, though marked by a monotony of gloom, has been described as magically musical.

Naevius (c. 269-204 B.C.). Roman dramatist and poet. A native of Campania, he was the predecessor of Ennius and an older contemporary of Plautus. He fought in the first Punic War, and afterwards settled in Rome and devoted himself to literature. He persistently attacked the aristocracy, especially the Metelli, by whom he was banished to Utica, where he died. He was the author of tragedies and comedies, and of the first Roman epic poem, written in the old Saturnian metre, the subject of which was the Punic Wars. Naevius drew most of the material of his comedies from Greek sources, especially Menander.

Naevus (Lat., birthmark) or **MOLE**. Lesion of the skin present at birth. The term is applied by pathologists to several abnormal conditions of the skin. Naevus vascularis is due to overgrowth of the blood vessels of the skin, and form the conditions known popularly as port-wine mark and strawberry mark. Small naevi are of very common occurrence. Naevi should be left alone unless they are increasing or cause disfigurement. Treatment by liquid air, solid carbon dioxide, or radium has been found effective.

Naevus pigmentosus is the pigmented mole. These moles may be single or scattered over the whole body, and may be as small as a pin's head or cover large areas. Sometimes they are covered with long hair. See *Mole*.

Naga. Tribes of Indonesian stock occupying the hill-ranges of E. Assam. They numbered in 1911 220,034, speaking diverse Tibeto-Burman dialects. The head-hunting warrior is distinguished by cowry ornaments with human hair and tattooing. Cane girdles and



S. Y. Nadson,
Russian poet

anklets are worn. Eighteen British expeditions, 1832-87, were needed for their subjugation.

Nagada. Town of Egypt. It stands on the left bank of the Nile, 16 m. below Luxor, Upper Egypt. Between it and Ballas 3,000 graves and two towns were excavated in 1894. The pottery, with paintings of gazelles, ostriches, and river-boats, was associated with bone harpoons, flint implements, and other neolithic remains. In 1897 de Morgan unearthed a brick mastaba, claimed to be the tomb of Mena, who founded the 1st dynasty.

Naga Hills. District of Assam, India. It is occupied by the Naga tribe, and comprises a section of the mountainous tracts on the borders of Burma. Manipur lies to the S.; practically none of the area is cultivated. Its area is 3,070 sq. m. Pop. 150,000.

Nagano. Town of Japan, in Honshu. It is situated towards the W. side of the island, near the confluence of the Saugawa and the Shinanogawa. It is the capital of a prefecture famed for its sericulture and forestry. The town was formerly called Zwenkoji, from the Buddhist temple which stands on an elevation in the city. The monastery dates from 664, but the buildings are modern; the chief images are reputed to have been made by Buddha himself. The town is on the rly. from Tokyo to the W. coast at Takata. Pop. 39,200.

Nagasaki. Seaport of Japan, on Kyushiu island. It stands on a fine natural harbour on the W. side of



Nadir Shah,
Ruler of Persia



Nagasaki, Japan. The bund, or harbour front; the European business centre of the town

the island, 3 m. from the open sea. It held the monopoly of European trade from the 16th century until 1859, when Japan was opened to foreign trade and towns more centrally situated superseded Nagasaki. The port has connexion by rly. and ocean liner with other Japanese ports. Coal is mined in the neighbourhood. There are coke

and briquette factories, ironworks, and dockyards. It trades in coal, rice, sugar, and camphor. Pop. 176,000. See Japan.

Nagina. Town of India, in the Bijnor dist., United Provinces. It is situated near the middle of the dist. on the rly. from Moradabad to Dehra. It manufactures cotton, cloth, and glass, and is noted for ebony carving. Pop. 19,600.

Nagoya. City of Japan, in Honshu. It is in the S. of the fertile plain of Mino and Owari, and owes its importance to the Shogun stronghold built in 1610. S. of the city is Nagoya harbour, on the bay of Ise. Silk and cotton, threads and fabrics are important manufactures, and the city was a pioneer in the clock industry. Atsuta Jingu is the second greatest Shinto shrine in Japan. Almost half-way between Tokyo and Osaka, the city has rly. connexion with these centres and those on the W. coast. Pop. 435,000. See Japan.

Nagpur. Division and dist. of the Central Provinces, India. The division consists of the Nagpur plain, sloping gently S. from the Satpura ranges and drained by the Wainganga and Wardha, to the Prabhata and Godavari. The dist. has a rainfall of 46 ins. Only a third of the land under cultivation is devoted to food grains, mainly wheat, most of the remainder being under cotton. Area, div., 22,677 sq. m.; dist., 3,840 sq. m. Pop. div., 3,110,000; dist., 810,000.

Nagpur. Capital of the Central Provinces, India, formerly the Maratha capital of the Bonsla rajahs. It occupies a central position between the Wardha and Wainganga rivers, in close relation to the great cotton-growing area of the Deccan. The importance of the town increased when the direct line from Bombay to Calcutta was made through it. It has several important educational institutions, including the Morris College. Pop. 101,000.

Nagy. Magyar word for great. It appears in numerous Hungarian place names and is the opposite of Kis, little; e.g. the two parts of Kumania, Nagy and Kis Kun.

Nagykanizsa. Town of Hungary. It is situated to the S.W. of Lake Balaton on the main line rly. from Budapest, 143 m. to the N.E., to Trieste with a branch through Odenburg (Sopron) to Vienna. There are distilleries and tile works. Pop. 26,500.

Nagykaroly. Town of Rumania formerly in Hungary. The Rumanian form of the name is Careii Mari. It is 185 m. E.N.E. of Budapest, on the main line to Ruthenia, with a branch rly.

connexion to the main towns of Transylvania. There are sawmills and textile factories. Pop. 16,100.

Nagykikinda. Town of Yugoslavia in the Western Banat, formerly in Hungary, and now known officially as Kikinda. It is on the main rly. line from Budapest through Ossova to Rumania, with only indirect connexion by branch lines with Belgrade, and a direct route to Pancsova. It is an agricultural centre. Pop. 26,800.

Nagykörös. Town of Hungary in the co. of Pest-Pilis-Solt-Kiskun. It is 56 m. by rly. S.E. of Budapest on the main line to Szeged, 10 m. N.N.E. of Kecskemét. Wheat, maize, and melons are grown, and cattle are reared. Pop. 28,600.

Nagyroce. Town in the Slovakia division of the Czechoslovak republic, now known as Velká Revúca; formerly in the kingdom of Hungary. It is 26 m. by rly. N.W. of Pelsőcz. Pop. 1,900.

Nagyszeben. Hungarian name of the Transylvanian town now the Rumanian Sibiu (*q.v.*).

Nagyszombat. Town in the Slovakia division of the Czechoslovak republic, also known as Trnava; formerly in the kingdom of Hungary. It is situated in the N. of the Little Alföld between the White Carpathians and the river Vág, 30 m. by rly. N.E. of Bratislava (Pressburg). Over half the people are Roman Catholic Slovaks. Pop. 15,000.

Nagyvarad. Town of Rumania, formerly in Hungary. At an earlier date known by the German name Grosswardein, it is also called Oradea Mare. It is almost due E. of Budapest, 160 m. distant by rly., on the main line to Transylvania and the Predeal Pass across the Carpathians. Near by are the Felix and Bishop's baths, warm springs which were known to the Romans. Reputed to have been founded by S. Ladislas in 1080, it was sacked by the Tartars in 1241. Pop. 64,200.

Nahan. Native state and town of India, in the Punjab. It is a mountainous area N. of Ambala dist., the Chor rising to 11,982 ft. There are forests of deodar and sal. The town is situated on the Sivalik Hills, 3,207 ft. alt., and has an iron foundry. Area, 1,198 sq. m. Pop. state, 139,000; town, 6,300.

Nahe. River of Germany. A left bank tributary of the Rhine, it rises near Selbach in Birkenfeld and joins the main stream at Bingen. Its length is about 60 m., much of its course being between vine-clad hillsides, the picturesque scenery of which attracts large numbers of tourists.

Nahr el Auja, BATTLE OF THE. Fought between the British and the Turks in Dec., 1917. After the fall of Jerusalem, Dec. 9, 1917, the first object of Allenby was to secure his front from W. to E., and especially to make safe his position in Jerusalem itself, the Turks being about 4 m. away both N. and E. In Nov. the British had crossed the Nahr el Auja, a river flowing into the Mediterranean, 4 m. N. of Jaffa, after their occupation of the latter, but had been pressed back S. of it by the Turks.

To protect Jaffa and hold the high road from that town to Jerusalem, Allenby decided to force the Nahr and occupy a stretch of country to the N. The British 52nd division, during the night of Dec. 20-21, 1917, crossed the river in three columns and took the enemy by surprise. One column forded the stream, and the two others charged the heights of Sheikh Muannis and Khurbet Hadrach. Beating down a stiff resistance, they took four villages on the N. bank, and consolidated their position.

In this battle the Turks lost 300 in prisoners alone. While it continued, a British warship co-operated by its fire with the infantry. Later the British occupied El Jellil and El Haram, 12 m. above Jaffa. See Jaffa, Capture of; Palestine, Conquest of.

Nahua. Collective name for American Indian tribes which dominated Anahuac, the Mexican tableland, at the time of the Spanish conquest. Their language was called Nahuatl. They dwelt in scattered pueblos, whose rivalry led to the formation of confederacies, whereof the Aztec finally secured the hegemony. Their descendants, called Mexicanos, numbered in 1910 516,410, the total indigenous population in Mexico being 1,929,797.

Nahuel-Huapi or TIGER LAKE. Large lake of Argentina, in the territory of Neuquen, bordering that of Rio Negro. Situated in the Andes, at an alt. of 2,000 ft., it is 75 m. in length and 10 m. in breadth, with an area of 110 sq. m., and contains many islands. It is the source of the river Limay, the boundary of the territories of Neuquen and Rio Negro.

Nahum. One of the minor prophets. A native of Elkoh, probably in Galilee, he flourished about the 7th cent. B.C. His book consists of predictions of the fall of Nineveh, which took place 606 B.C. The reference to the capture of No-Amon (Thebes) by Ashurbanipal, king of Assyria, further shows that it must have been written later than 666 B.C.

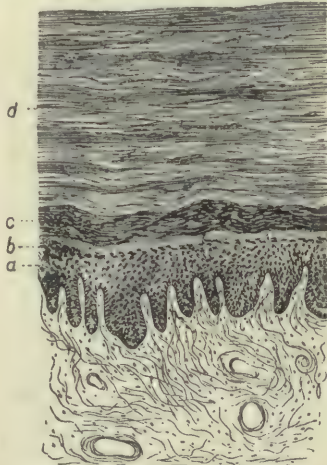
Naiadaceae. Natural order of marsh, marine, and fresh water herbs. With creeping rootstocks, and often floating leaves, they are natives of all climates. The flowers are green and inconspicuous. Well-known examples are the fragrant Cape pond weed *Aponogeton*, the European pond weeds *Potamogeton* and the sea-grass *Zostera*.

Naiads OR **NAIADES.** In Greek mythology, nymphs of rivers, brooks, springs, and fresh water generally. See *Nymphs*.

Naidu, SAROJINI. Indian author. Born at Hyderabad, Deccan, she was educated at King's College, London, and at Girton College, Cambridge. She published three volumes of verse in English, and on her return to India lectured on social and educational subjects, devoting her attention especially to the feminist movement.

Naihati. Town of Bengal, India, in the dist. of the 24 Parganas. It is situated on the left bank of the Hooghli, 24 m. above Calcutta. Pop. 18,200.

Nail. Piece of metal consisting of a thin shank or tang, commonly tapered towards or pointed at one end, the other being formed with a



Nail. Vertical section through human nail and nail-bed. *a*, Stratum malpighii, and, *b*, stratum granulosum, of nail-bed; *c*, deep layers of nail substance; *d*, superficial layers. Highly magnified

head. It is used for driving into wood or other material to secure one piece to another, or to serve as a projection upon which a variety of objects may be supported or hung. Nails are usually fashioned of iron, brass, or copper, and are cast, cut, wrought, or formed from wire. Nails are often distinguished as twopenny, 1 in. long; threepenny, 1½ ins. long; and fourpenny, 1½ ins. long.



Nail. 1. Cut nail. 2. Cut brad or floor brad. 3. Oval wire nail. 4. Small ditto. 5. Wall nail. 6. Small clout nail. 7. Panel pin. 8. Round wire nail. 9. Galvanised chisel-pointed roof nail. 10. Bright roofing nail. 11. Brass-headed nail. 12. Lath nail. 13. Small stout tack. 14. Screw pin. 15. Drugget pin. 16. Chair nail. 17. Tinned tack. 18. Cigar-box pin. 19. Small pin. 20. Wire gimp pin

Until the end of the 18th century practically all nails were hand made, forged from nail rods by the blacksmith. The chief centre for nail-making was in Birmingham, and women and children were largely employed. In 1790 a nail-making machine was invented by T. Clifford in England, but machinery was first adopted on a large scale in America. Strips of metal of the thickness of the nail are fed into the machine, which automatically cuts the strips into the required lengths, punches the shaped heads, and points the nails at the rate of 1,000 a min., or less. Wire or French nails are made in the same way from wire. Ornamental headed nails have the heads shaped by special dies.

Nail. Horny scaly growth at the ends of fingers and toes of human beings and some animals. The human nail consists of three parts: the extremity or apex; the opposite end or root, where it emerges from the flesh; and the whitish part, termed the lunula, or half-moon. Nails are a special growth of the epidermis or skin tissue.

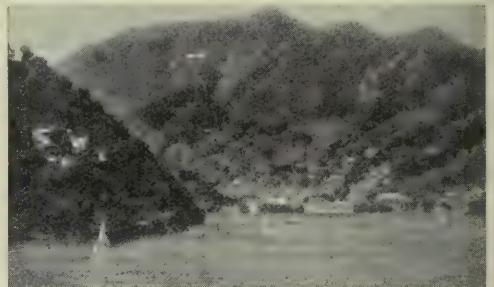
In biology they are homologous with the hoof and claw of other animals. See *Horn*.

Nain. Ancient town in Galilee, situated 6 m. S.E. of Nazareth, on the summit of Little Hermon, or the hill of Moreh. The ancient town was probably on its summit. It was

the home of a youth whom Christ raised from the dead (Luke 7).

Naini Tal. Dist. and town of the United Provinces, India, in the Kumaun division. The dist. is situated on the Himalayan slopes N. of Rampur State. The annual rainfall averages 67 ins. Only a sixth of the area is cultivated. The town is a hill station reached by road from the rly. terminus at Holdwani. Here are the hot weather headquarters of the administration of the United Provinces. Elevation 6,409 ft. Area, 2,721 sq. m. Pop. dist., 324,000; town, 9,600.

Nainsook (Hind., pleasure of the eye). Soft muslin of Indian origin. Nainsooks are either plain or striped, the stripes running lengthways. In India they were sometimes made of silk. See *Muslin*.



Naini Tal, India. The summer station of the United Provinces administration by the lake of Naini Tal

Nairn. Royal and mun. burgh and watering-place of Nairnshire, Scotland: also the county town.



Nairn seal

It stands where the Nairn falls into the Moray Firth, 15 m. from Inverness, and is served by the Highland Rly. The attractions include good bathing and golf links. It has a good harbour, and the chief industries are fishing and the making of rope. Nairn, known then as Invernairn, was made a royal burgh in the 12th century. Pop. 4,700.

Nairne, CAROLINA, BARONESS (1766-1845). Scottish ballad-writer. Daughter of Laurence



Baroness Nairne, Scottish ballad writer

Oliphant, and a member of a prominent Jacobite family. she was born at Gask, Perthshire, Aug. 16, 1766, and in 1806 married her second cousin, William, afterwards Baron Nairne (1757-1830), to whom she bore one son, William (1808-37). Her beauty and charm won for her the name of The Flower of Strathearn. After her husband's death she lived in Ireland and on the Continent, and died at Gask, Oct. 26, 1845. She wrote nearly 100 songs, some of them adaptations of old favourites, among them *The Land o' the Leal*, *Call'er Herrin'*, and *The Laird o' Cockpen*. First published anonymously in The Scottish Minstrel, 1821-24, they were issued in volume form in 1846 as *Lays from*

Strathearn. See *Life and Songs of Lady Nairne*, C. Rogers, 1869; *Jacobite Lairds of Gask*, K. Oliphant, 1870; *Lady Nairne and her songs*, G. Henderson, 1905. The Oliphants of Gask. Records of a Jacobite Family, M. E. Blair-Oliphant, 1910.

Nairnshire. Maritime county of Scotland. It has about 10 m. of coastline on the Moray Firth, and



Nairn. General view of the town and banks of the Nairn, from the North

the surface rises therefrom towards the S., attaining an alt. of 2,162 ft. in Carn Glas. Its area is 162 sq. m. The chief rivers are the Findhorn and the Nairn. The county is an agricultural area, but much of the land is only suitable for sheep. It is served by the Highland Rly. Nairn is the county town, and in the shire are Cawdor and Kilravock with their castles and Auldearn. In 1891 detached portions of Nairnshire were absorbed in the counties of Ross, Inverness, and Moray. In early times, Nairn was part of the district called Moray, and it has always had a close association with the shire of that name. It joins with Moray to send a member to Parliament. Pop. 9,300. See *History of Moray and Nairn*, C. J. G. Rampini, 1897.

Nairobi. Administrative capital of Kenya Colony, E. Africa. Situated on an elevated plateau, alt. 5,450 ft., it is within easy reach of the Kikuyu and Limoru highlands. There are two rainy seasons, but the climate is healthy and invigorating. Nairobi is on the Uganda Rly., 327 m. from Mombasa, and 257 m. from Kisumu (Port Florence) on the Victoria Nyanza. In 1899 it was only a rly. settlement, but is now a flourishing centre. Pop. (est.) 20,000.

Naivasha. Prov., town, and lake in Kenya Colony, E.

Africa. The prov. has a European pop. of about 1,600 and a native pop. of approximately 133,000. The Nakura district is extensively cultivated. Lake Naivasha is about 12 m. long by 9 m. broad, and the water is slightly brackish. The township on the E. of the lake is on the Uganda Rly., 391 m. from Mombasa, and 64 m. N.W. of Nairobi.

Najibabad.

Town of the United Provinces, India, in the Bijnor dist. It is situated in the N. of the dist., and is a rly. junction on the route from Delhi to Dehra. Pop. 18,500.

Nakhitchevan.

Town of Erivan in Transcaucasia. It is 85 m. S.E. of Erivan. Leather, bricks, and pottery are manufactured,

and in the neighbourhood are important salt mines and stone quarries. It is the Naxuana of Ptolemy. Once an important Armenian city, it belonged to Persia from 1673 to 1828, when it was ceded to Russia. Pop. 9,000.

Nakhitchevan-on-Don. Town of S. Russia. It is in the government of Ekaterinoslav, on the Don and the Koslov-Rostov Rly. Candles, cotton goods, and bricks are the chief manufactures. It is the seat of an Armenian patriarch. Pop. 54,000.

Nama or **NAMAQUA.** Division of the Hottentot people, mostly in Namaqualand, S.W. Africa protectorate. Numbering 14,000, they have preserved their racial type and speech more completely than the Korana division, who remained behind in the upper Orange basin. From 1881 to 1906 they were in incessant conflict either with the Herero, or with the Germans. Despite missionary influence they still cling to their ancestral pastoral nomadism. See *Hottentot*.



Nairobi, Kenya Colony. Government House, situated on a hill overlooking the town



Nairnshire. Map of the Highland county south of Moray Firth

Namangan. Town of Russian Turkistan. It is in the province of Ferghana, in the valley of the Syr-Daria, 50 m. from Khokand. Considerable trade is carried on in cotton, fruit, hides, and sheep. In the neighbourhood are naphtha wells and coalbeds. Pop. 70,000.

Namaqualand, GREAT. Country in the S.W. African Protectorate, formerly German S.W. Africa. Extending from the Orange River to Damaraland, it is mainly a sterile desert region, and was occupied by the Germans in 1885. It is inhabited by the Namas, a few bushmen, some tribes of Hottentots, and white settlers. *See* South-West Africa Protectorate; consult also *The Germans and Africa*, P. Evans Lewin, 1915.

Namaqualand, LITTLE. Dist. in the Cape Province. It lies S. of the Orange River, by which it is separated from Great Namaqualand. Copper is exported from Port Nolloth. Area 20,000 sq. m. Pop. 20,000. *See* Cape Province.

Namasagali. Port on the Victoria Nile. It is connected by the Busoga Rly. with Jinja, while steamers run to Foweira, 160 m. N.N.W.

Nam-dinh. Town of French Indo-China, in Tong-king, on the rly. from Hanoi to Hué and Tourane. It is 45 m. S.E. of Hanoi, on the Songka. There is a trade in silk and cottons. Pop. 31,000.

Name. Title by which any person or object is indicated; in a narrower sense, the name given to a person or object to distinguish it from others of the same class. The manner in which personal names were given varied among different peoples, but names taken from personal characteristics and peculiarities are common to all.

Legally, the names of persons are divided into Christian names and surnames, the former given at baptism, the latter being that of the father, usually. Christian names may be changed with the consent of the bishop, and those who are not christened have surnames only, ecclesiastically. An illegitimate child, in English law, takes the mother's name. A woman takes her husband's name on marriage and retains it after divorce, under English law, but in Scotland she may retain her maiden name for legal purposes. A man may change his surname by deed poll or by repute, but such a name is only officially recognized by royal licence.

The Greeks had no names answering to our surnames, and it was left to the parent to decide what name the child should have. Most Greek names were compound—

Leuk-hippos (with white horses), *Thrasy-bulus* (bold in counsel). In oldest times, the child as a rule took the name of his grandfather, sometimes that of his father. For the sake of distinction a patronymic was often added—Agamemnon Atrides, Agamemnon the son of Atreus; or the father's name was added in the genitive—Cimon of Pericles.

The Romans originally only had one name, generally simple, not compound—Romulus—but in republican times three names became the rule: *praenomen*, answering to our Christian name—Aulus, Marcus, usually abbreviated to A., M.; *nomen*, the gentile or clan name, nearly always ending in—*ius*, e.g. Julius, Tullius; *cognomen*, the family name, Caesar, Cicero. A fourth name, *agnomen*, was given for famous deeds, such as Africanus, and in cases of adoption, when the adopted son took the three names of his adoptive father, to which he added that of his own clan or gens (*q.v.*), with an altered termination. Women as a rule had the clan or gens name of their father with a feminine termination, e.g. Tullia.

In England many names are derived from personal characteristics, and are really mere epithets. Patronymics are formed by adding son, e.g. Johnson, Thompson, a favourite method in Scandinavian countries. English surnames may be classified as general and special local names—Hill, Dale, Burton, Buxton; names of occupation—Barber, Brewer, Baker, including lost trades, Fletcher, Pargiter, Reeve; names formed from Christian names, as Wilkinson, Wills, Willis, from William; names of mental or physical characteristics—Good, Wise, Long, Black, White. Of the fifty or sixty Christian names in use more than half have a religious origin.

Amongst the Spaniards, names derived from the father end in -*ez*, e.g. Hernandez, the son of Hernandez. The old Persians and Indians had compound names, like those in earliest use among the Greeks and Germans. Amongst the Indians and Hebrews religious names were common—Kalidasa, servant of the goddess Kali, Eliezer, whom God helps. The Arabs form a *praenomen* by the aid of the prefix *abu*, father; names like Hassan, which did not descend from father to son, were usually followed by the name of the father, with an interpolated -*ibn*- or -*ben*-, son of—Hassan-ibn-el-Abbas; other names were taken from religion and court—Salah ed-din, safety of faith, Saladin; from a

man's occupation, tribe, birth-place, or sect, while others were pure nicknames. Among the Chinese the *praenomen* is not definitely established, and may be changed until a person enters an educational institution or becomes the holder of a public office.

Geographical names are often intended to convey to the mind a kind of picture representing the most salient physical features. Such are Benmore, Morven, both meaning great mountain; Mont Blanc, white mountain. In Celtic Aber, Inver denote places at the mouth of a river—Aberconway, Aberdeen, Abergeldie and Invergeldie, Inverness. Ard, Craig, Drum, Fell, Pen, Tor and others refer to high ground generally—Ardglass, green height; Craigmore, great rock; Drumlane, broad ridge; Seawell, the mountain of the promontory; Penmaenmawr, the great stone head; Torbay, the hill over the bay. There are frequent references to colour, plant and animal life. *See* Place Name.

Bibliography. *Praenomina: the Etymology of Christian names.* R. S. Charnock, 1882; *Geographical Etymology: a Dictionary of Place Names*, C. Blackie, 1887; *Dictionary of English and Welsh surnames*, C. W. Bardeley, 1901; *Words and Places*, I. Taylor, 1909.

Naming Customs are rites and usages attending the choice and bestowal of personal names. In primitive culture an underlying notion is traceable that names are the substance of individual souls expressed by the voice. So the Eskimo, by naming children after the person last deceased in the village, seek to perpetuate the tribal soul, while the Aztec, by bestowing the name of a dead relative, did the same for the family-soul.

As death or injury may result from the malevolent misuse of names, they are frequently kept secret, sometimes by entrusting them to material objects buried out of sight, other designations being employed in ordinary life. This idea is extended to divine names. Moreover, such crises as initiation, marriage, social promotion, and death necessitate name-changing, by replacement or accumulation, the Kwakiutl even having summer and winter names. Name-changing is also practised for deceiving disease-demons or counteracting sorcery, while opprobrious names, such as Three-farthings, Dustheap, Perdita (lost), are frequently bestowed in infancy to avert evil eye.

A widely observed custom, called teknonymy (Gr. *teknon*, child, *onoma*, name), requires

fathers to drop their previous names at the birth of sons, and to assume instead the sons' names, or names meaning father of N. Many peoples, as Fuegians and Malays, taboo the names of the deceased, and in Tahiti and Zululand extend this prohibition to all related words in the language, for a time at least.

Name, FEAST OF THE. Roman Catholic feast in honour of the Blessed Virgin Mary. It arose in Cuenea, Spain, in the 16th century, and is one of 20 of a similar character. First kept on Sept. 22, then on Sept. 8, it is now observed on Sept. 12.

Name Day. Term in the London and other Stock Exchanges. It was applied to the second day of the fortnightly settlement, when the names of the purchasers of stocks and shares were handed in by the brokers concerned, preparatory to the following pay day. Since August, 1914, when the fortnightly settlements were abandoned, there have been no name days, transactions being settled daily. See Stock Exchange.

Namoi OR PEEL RIVER. River of New South Wales, Australia. It rises in the Liverpool Range and flows for about 600 m. N.N.W. to join the Barwon or Darling river. Its upper valley, almost encircled by mountain ranges, is a valuable wheat-growing area. The lower valley is a pastoral area.

Namur. Prov. of Belgium. It is contiguous with the provs. of Brabant, Hainault, Liège, and Luxembourg, and with France. The surface is generally hilly, and the prov. is intersected by the deep and picturesque valley of the Meuse. The fertile soil of the N. is well cultivated, the S.E. part is covered with valuable forests, representing a continuation N. of the French Ardennes. The Sambre valley is the chief industrial area, and there are rly. services to all important towns. Namur is the capital, the three arrondissements being Namur, Dinant, and Philippeville. Area 1,414 sq. m. Pop. 357,000.

Namur (Flemish, Naemen). Town of Belgium, capital of the prov. of Namur. It lies 35 m. by rly. S.E. of Brussels, at the confluence of the Sambre and Meuse. The disused citadel stands between the two rivers, and Salzinnes, Belgrade, S. Nicolas, and Jambes are suburbs connected by tramway with the town. Namur is a rly. junction, has barracks and other military buildings, law-courts, and a prison. The industries include the manufacture of cutlery, leather, iron-work, and distilling. The 18th

century cathedral of S. Aubain, in Renaissance style, on the site of an earlier building, contains the heart of Don John of Austria. The 17th century church of S. Loup is a good example of the Baroque style. The late 14th century belfry was rebuilt in the 16th. There are museums of archaeology, and above the citadel is a finely laid-out park. Pop. 32,000.

Namur, SIEGES OF. In the war of the Grand Alliance, the French under Vauban invested Namur, May 26, 1692, and captured the town on June 5, and the citadel itself on June 23. Namur was defended by the Dutch engineer, Menno van Coehoorn (1641-1704), who constructed its fortifications. In 1695, however, William III of England, with Coehoorn, besieged the town, now defended by Boufflers, and after 67 days' investment captured the citadel on Aug. 30, 1695. The later fortifications were constructed in 1888 by Brialmont as part of the Meuse Valley system.

At the outset of the Great War it was prominent as the meeting point of six rlys. and the pivot on which the French armies were to

lette, began. Next day the garrison of Namur, supported by 3,000 French infantry, attacked the German artillery positions, only to be repulsed with heavy loss, and on Aug. 23 Lanrezac was forced to retreat in order to escape envelopment. By the morning of that day only three of the Namur forts remained in action. The rapid advance of the Germans compelled the Belgian field troops to retire; they fell back with the loss of their rear-guard; and the Germans penetrated into the town of Namur, part of which they burnt, at the same time murdering 75 civilians. On Aug. 25 the last forts suc-



Namur, Belgium. Citadel and bridge over the Meuse, from the suburb of Jambes. Above, west front of the cathedral of S. Aubain

manoeuvre in their attempt to outflank the Germans in Belgium. Its ring of 9 armoured forts, mounted 350 guns, of the type which at Liège had failed to resist the heavy German artillery. The Belgian troops in Namur consisted of the 4th division, 8th brigade, and garrison units, totalling 30,000 men, with part of Lanrezac's 5th French army close at hand, to the S.

On Aug. 19, 1914, troops of the 2nd German army (Bülow) appeared near the forts and prepared positions for the heavy German and Austrian howitzers. Gen. Gallwitz took command of the besieging force, which was strengthened by troops and heavy artillery from the 3rd German army (Hausen). On Aug. 21 a very violent bombardment of the three eastern forts, Andoy, Maizeret, and Marcheve-

cumbed. The German loss was about 12,000 men, and the Allied loss was quite as heavy. See Belgium; Fortress.

Nanaimo. Town and port on Vancouver Island, Canada. Situated 73 m. from Victoria, it is a station on a branch of the C.P.R. with a good harbour, whence steamers go to Vancouver, Victoria, and elsewhere. There are saw mills and brickyards, and fishing and fish curing are carried on. Coal is found in the neighbourhood and exported. The town originated as a post of the Hudson Bay Co. Pop. 8,300.

Nana Sahib (fl. 1857). Leader in the Indian Mutiny, 1857-58. A Maratha Brahmin, Dundhu Panth by name, he was born about 1821 and was the adopted son of the last peshwa Baji Rao. Incensed at the British refusal to continue the

pension after his father's death, 1853, he lost no opportunity of fomenting discontent in the disaffected parts of India. On the outbreak of the Mutiny he proclaimed himself peshwa, wreaking his vengeance on the British by ordering the massacre at Cawnpore (*q.v.*). On the suppression of the Mutiny Nana fled to the Terai jungles of Nepal, where he is reported to have died.

Nan-chang. Capital of Kiang-si prov., China. It is situated on the Kan river, and was formerly on the Po-yang Lake, which has since receded some 30 m. Nan-chang is now connected by railway with Kiu-kiang on the Yang-tse. Pop. 300,000.

Nancy. City of France. The capital of the dept. of Meurthe-et-Moselle, it stands on the river Meurthe, 220 m. E. of Paris. It was the capital of Lorraine before the war of 1870. The Place Stanislas, the principal square, was laid out by Stanislaus Leszcinski, who resided at Nancy, and on his abdi-

1742, was converted on the French Revolution into a temple of reason. The fortifications of the old town were destroyed by Louis XIV when he annexed Lorraine. Nancy is famous for its embroideries, and its manufactures



forts ending at Toul in the N. and Épinal in the S. Castelnau held a front from Pont-à-Mousson along the Grand Couronné to Dombasle, near Lunéville. Dubail's army was on his right, prolonging his front to the Vosges. The German 6th and 7th armies under Prince Rupert were flung upon this position.

On Aug. 24 the battle began, and on Aug. 25 the Germans



Nancy, France. 1. Government Palace and its courtyard, formerly the residence of the governors of the province. 2. West front of the cathedral. 3. North-west side of Place Stanislas, the Porte Royale, a triumphal arch built in honour of Louis XV; left is the modern Gothic church of S. Epvre. 4. Wrought-iron gate at the corner of Place Stanislas, looking towards the cathedral

cation from the Polish throne in 1736, became duke of Lorraine.

Of the buildings for which he was responsible, the chief is the church of Notre Dame, in the Italian Renaissance style. The ducal palace was built in the 16th century, and contains a statue of the Duke Antonio, relics of Napoleon, and many antiquities.



Nancy arms

A picturesque feature of the town is the Porte de la Craffe, formerly a prison, restored in 1861.

The founder of the handsome new town was Charles III, who laid the first stone in 1608. The school of forestry is of European fame. The cathedral, completed in

include cambric, muslin, iron, cotton, wool, tobacco. Pop. 120,000.

Nancy, BATTLE OF. Fought between the French and the Germans, Aug.-Sept., 1914. During the battle of Morhange (*q.v.*) a German force from Metz tried to cut off the French retreat and attacked two French reserve divisions (Gen. L. Durand), holding the Grand Couronné, a great semi-circular ridge, rising in the Mont d'Amance to 1,345 ft., which protects Nancy on the N. Field works had been constructed there, and Durand repulsed the Germans, though they burnt Nomeny.

After their defeat at Morhange, Castelnau and Dubail, with the 2nd and 1st French armies, fell back to a strong position covering the Gap of Charmes, which lies between the two systems of French

reached Rozelieures and approached the outskirts of the forest of Charmes, when Castelnau counter-attacked with the 15th and 16th corps. The German command was taken by surprise. Noting hesitation in the German movements, Castelnau, at 3 p.m., ordered all his troops to attack with their entire strength. Rozelieures was recovered, and the German infantry began to show signs of exhaustion. On Aug. 26 the French gained ground in all directions and pushed to within 2 m. of Lunéville. On the 27th-28th they made further gains and the Germans passed to the defensive. It was fortunate for them that Fort Manonviller surrendered on the 27th, thus clearing their communications.

Castelnau, whose forces were greatly exhausted, took up a posi-

tion from Pont-à-Mousson along the Grand Couronné heights to a point near Lunéville, and thence along the Meurthe and Mortagne to Baccarat, strongly entrenching. On this front the second phase of the battle was fought, Sept. 4-12. It was timed by the German staff to coincide with the attempt of Kluck to turn the French left near Paris, and roll up and envelop the French armies. All the available German heavy artillery was brought up to attack the Grand Couronné.

There was severe fighting near Lunéville and towards the Gap of Charmes on Sept. 4, and next day a determined attack opened on the Grand Couronné at Ste. Geneviève and Mont d'Amance. The French had to abandon the summit of Mont d'Amance. Late on Sept. 6 a series of furious assaults on Ste. Geneviève began and continued during the night. The French resistance was most stubborn, but the Germans pushed up the valley of the Moselle and approached Dieulouard, taking the French front in reverse and threatening to penetrate between Nancy and Toul. Early on Sept. 7 Ste. Geneviève was evacuated.

The French front was now turned on one flank and the centre in grave danger. Castelnau prepared an order to retreat, but, pressed by Dubail, he waited and, learning that the Germans also showed extreme exhaustion and had not seized Ste. Geneviève, decided to continue, orders being at once given to the French troops to reoccupy the evacuated positions. All through Sept. 8 there was terrific fighting in this quarter, and neither side could make progress. On Sept. 9 the battle continued, but in the evening the Germans obtained a truce to bury their dead.

To the S. of the Grand Couronné, on Sept. 6, the Germans took Gerbéviller, which they had occupied previously in Aug., but it was retaken the same afternoon. Dubail with his 1st army had been weakened by the withdrawal of two corps for the W. end of the front, yet he was generally able to maintain his ground and hold the Germans. On Sept. 10 Joffre issued orders congratulating both armies. That day the battle was resumed with little change of front. On Sept. 11 the French made steady gains E. of Nancy, clearing Pont-à-Mousson and Ste. Geneviève. On the 12th a general German retreat began, and the 16th French corps entered Lunéville.

The victorious French had lost heavily, but the Germans were also terribly punished, and



Nancy. Map of the ground over which the battle of Aug.-Sept., 1914, was fought, showing territory regained by French

Prince Rupert was much criticised for his tactics. After the battle nearly all of Castelnau's army was withdrawn to the W., and Dubail held the line from Toul to the Vosges. In the second phase the French probably had about 200,000 men against 250,000 Germans, though according to German authorities, the German strength was inferior to the French. See *La Grande Guerre sur le front Occidental*, B.E. Palat, vol. iv., 1919; Michelin Guide, Nancy et le Grand Couronné, 1919.

Nancy. Character in Charles Dickens's novel, *Oliver Twist*. One of the Jew Fagin's girl-thieves, she turns informer, and is murdered by Bill Sikes.

Nanda Devi. Peak of the Himalaya Mts., India. It rises to 25,645 ft. above the plains of Kumaun in the N. of the United Provinces.

Nander. Town of Hyderabad, India. It is situated on the left bank of the Godavari, 126 m. S.W. of Amraoti, with which it is connected by road, on the Bombay-Hyderabad Rly. Pop. 14,000.

Nandgaon. Native state of the Central Provinces, India. It is situated on the watershed between the Wainganga and Mahanadi valleys. Rice, wheat, and cotton are grown. The capital is Rajnandgaon, on the rly. between Nagpur and Raipur. Area, 871 sq. m. Pop. 167,000.

Nandi. Nilotic negro people in Nyanza prov., Kenya. Migrant from Lake Rudolf, they colonised the Nandi plateau, 8,000 ft. high, and other forested uplands to N. and S. They have imparted their language and culture to the Dorobo

hunters of Masai-land. The main type, short, small-faced, prognathous negroids, are mingled with a caucasoid, big-nosed, straight-jawed type betraying Galla contact. In consequence of their depredations on the railways and telegraphs they were removed in 1906 to reserves. See Negro.

Nanga Parbat. Peak of the Himalaya Mts., India. It rises to 28,620 ft. in the Zaskar Range in the S.W. of Baltistan. Here the Indus flowing N.W. through Baltistan makes

its great bend round the mighty peak, to flow W. and then S.W. through the Punjab.

Nankeen. Yellowish cotton fabric said to have been first made at Nanking, China. Originally it was made from *Gossypium religiosum*, a brownish-yellow native cotton, and was undyed. Nankeen is now made in Europe and other countries from ordinary cotton, dyed yellow, and is exported to China. In central Asia it seems to be known as nanka.

Nanking. Capital of Kiang-su prov., China. It is situated on the Yang-tse, though the walled city lies away from the river, nearly 200 m. from the mouth. Its port is accessible to ocean-going steamers all the year round. The circuit of the walls is over 20 m. Only a portion of the land enclosed is inhabited, but the area has been opened up of recent years by roads. Nanking is the administrative centre of the two provs. of Kiang-su and Anhwei, and the residence of the viceroy or tutuh. Near by are the Ming tombs, including that of the founder of the dynasty, Hung Wo.

The town gave its name to Nankeen cloth. Among its other manufactures are satin crêpe and Indian ink. Government establishments include an arsenal, powder works, and a mint. There are a university, a naval college, and an agricultural experimental station, with school of forestry. The town is connected by rly. with Shanghai, and Pukow, the port on the opposite bank of the Yang-tse, is the terminus of the Tientsin-Pukow Rly. An agreement has

been signed for the construction of a line from Nanking to Chuchow, in Hunan.

Dating from the 5th or 6th cent. B.C., Nanking, the name of which means southern capital, was the capital of China for several periods between A.D. 222 and 501, and again from the accession of the Ming dynasty in 1368, until their removal to Peking in 1403. The city was nearly destroyed by the Taipings, who took it in 1853, and overthrew the famous Porcelain Tower. It was their capital until 1865, and gradually recovered after the suppression of the rebellion. At Nanking the first treaty between Great Britain and China was signed, Aug. 29, 1842. Pop. 370,000.

Nanning. City of Kwangsi province, China. It stands on the Sikiang or West River, 320 m. S.W. of Canton. It was opened as a treaty port, 1907. Pop. 40,000.

Nansen, FRIDTJOF (b. 1861). Norwegian explorer. Born near Christiania, Oct. 10, 1861, he



Fridtjof Nansen,
Norwegian explorer

graduated at Christiania University. He went to Greenland in 1882 to obtain zoological specimens, and on his return was appointed curator of the natural history museum at Bergen. In 1888-89 he crossed Greenland from E. to W., publishing *The First Crossing of Greenland*, 1890. In 1893 he embarked on the *Fram* on a polar expedition. Passing the N. coasts of Europe and Asia, he placed his vessel in the pack ice off the New Siberia Islands, and in 1895 made a dash for the pole, reaching 86° 14' N., at that time the farthest point yet reached.

Upon his return in 1895 he wrote *Farthest North*, 1897, and various scientific articles on his observations of the arctic conditions. In 1905 he took an active part in politics, had much to do with the separation of Norway from Sweden, and was the first Norwegian ambassador to England, resigning in 1908. In 1920 he was director of the international scheme for repatriating prisoners of the Great War, and professor of oceanography at Christiania University, and in 1921 High Commissioner for Russian Famine Relief. See Dr. Nansen, the Man and His Work, F. Dolman, 1897.

Nanshan. Mt. range of Asia. It comprises parallel ridges between the Gobi desert and the Tsaidam



Nanking, China. Avenue of giant statues, leading to the royal tombs of the Ming dynasty

Swamp on the N.E. boundary of Tibet. The range, alt. 14,000-16,000 ft., which has a general direction N.W. and S.E., is a continuation of the Kwenlun and Altyn Tagh systems. Among the names given to sections of the Nanshan Range are the Alexander III, the Humboldt, the Ritter, and the Amne-Machin Mts.

There is a second range of the same name S. of the Yangtze, running parallel with the coast from Kwangsi to Chekiang prov. Its greatest alt. is 9,500 ft.

Nanshan, BATTLE OF. Fight between the Russians and the Japanese, May 26, 1904. Japan, having Korea in her hands, determined to capture Port Arthur, and this battle practically marks the commencement of the siege. The second army under Oku had been embarked during April and began to land near Pitzewu on May 5, but it took nearly three weeks for the whole disembarkation and for the extension to Port Adams across the peninsula.

Having captured Kinchow, Oku provided a guard to the N. against a relieving force, and, turning to the S., found himself faced by the naturally strong position of Nanshan, a line of hills, 300 ft. high in the centre, across the narrowest part of the peninsula, both flanks resting on the sea, the left (W.) ending in precipitous cliffs, and the right supported by the fire of Russian gunboats. The position was held by about 12,000 Russians, carefully entrenched, and with their front covered by formidable obstacles, but was engaged by the Japanese with great valour and determination. Their first rush at dawn on May 26 only carried them up to the beginning of the obstacles, but through this day of stress they made nine successive attempts to carry the position, losing heavily, in the effort to find a weak flank. Towards evening an attack pushed strenuously all along the line carried out the scheme. A division on their right,

powerfully aided by artillery fire from land and sea, waded along the coast, and swarming up the cliffs, turned the Russian left.

Stössel, in command at Port Arthur, although only 3,000 of his men had actually been engaged, and he had only lost about 1,500 men, ordered a retire-

ment to the prepared positions in rear. It was a decided Japanese victory, for they had captured many guns, and were now in a position to begin the investment of Port Arthur. See Port Arthur; Russo-Japanese War.

Nanterre. Village of France. It is 5½ m. N.W. of Paris, and was the birthplace of S. Geneviève, whose prayers are said to have preserved the city from Attila. The church contains an alleged fragment of the true cross, an object of veneration by pilgrims for centuries. Pop. 5,100. See Geneviève.

Nantes. City of France. The capital of the dept. of Loire-Inférieure, 248 m. S.W. of Paris, it



Nantes arms

is built on several islands of the Loire, which is joined in the centre of the city by the Erdre. Though 35 m. from the sea, it is a great seaport, fourth in importance in France, a shipbuilding centre, and a naval arsenal. Large steamers come up by the ship canal from St. Nazaire. There are over 11 bridges across the rivers, and the quays extend for 2 m., making handsome promenades. The city is almost entirely modern, having been rebuilt 1865-70. The only old street is the Rue de la Juiverie. Here are large textile, machinery, glass, soap, and chemical factories. The cathedral of S. Pierre (1434) has a fine nave, and contains a notable altar tomb of Francis II, the last duke of Brittany, and his wife Marguerite.

The castle of the dukes of Brittany, built in the 14th century, has massive towers and a moat. Here Henry IV signed the edict of Nantes in 1598, and many other kings of France resided. Cardinal de Retz escaped from prison in the castle in 1654. It was the scene of a serious fire in 1921.

Nantes was the capital of the Gallic tribe of the Namnetes, and



Nantes, France. West front of the cathedral of S. Pierre. The towers are unfinished, but the portals are elaborately ornamented

in the Middle Ages was for a time the capital of the duchy of Brittany. It was fortified and besieged several times in civil and other wars. From Nantes, Charles, the Young Pretender, who had for some time lived here disguised, embarked in a brig on his expedition in 1745. The river was the scene of the worst horrors of the Reign of Terror, about 9,000 persons being drowned in its waters. In the Great War it was on the line of communications between the port of St. Nazaire and Paris, the route being used by some of the British forces in 1914, and by the Americans at a later date. Pop. 170,500.

Nantes, EDICT OF. Law or edict issued in 1598 by Henry IV of France, giving liberty of worship to the Huguenots. The accession of the Protestant Henry of Navarre to the throne of France in 1589 and his conversion to Roman Catholicism brought no immediate relief to the Huguenots, who still suffered serious disabilities, despite the various pacifications attempted in the course of nearly 40 years of religious warfare. At length meetings were arranged between the king and the Protestant leaders, and the edict signed at Nantes by Henry, April 15, 1598, contained a large number of articles, the effect of which was to give civil and some religious liberty to the Huguenots.

They could hold meetings for worship in certain specified places, although not in Paris. They could fill official positions and enter uni-

versities, colleges, etc., while their pastors were paid by the state. They could trade freely and inherit property. As security they were given 100 places as cities of refuge, and disputes about the edict were heard before special courts in which they were represented among the judges. These courts were connected with the various parlements. The edict was revoked by Louis XIV in Oct., 1685, after the Huguenots had been steadily losing their rights under it for some years. See France: History.

Nanteuil, ROBERT (c. 1623-78). French engraver. He was born at Reims, and about 1646 entered the



Nantucket, Massachusetts. The town and water front viewed from the harbour

studio of Nicholas Regnesson at Paris. In 1658 he was appointed engraver and designer to the king. By this time he had evolved a clear and beautiful method of engraving, and his crayon portraits were also esteemed. Engraved portraits of his own design included several of Louis XIV and the Prince of Condé.



Robert Nanteuil, French engraver
Self-portrait

Nantgarw. Village of Glamorganshire. In the valley of the Taff, it is 5 m. from Cardiff. It gives its name to a variety of china. In 1811 Billingsley, the flower painter, opened a factory here. He had been associated with Duesbury at the famous works where Crown

Derby was produced. Thence he went, in 1796, to Pinxton, and in 1803 to Torksey, opening a pottery in both places, and finally to Nantgarw. His Nantgarw pottery is unique, the fine body of even texture being more like glass than china. Pieces are comparatively rare. He decorated some with flowers, but most of his china was decorated by other potters. See Pottery.

Nanticoke. Bor. of Pennsylvania, U.S.A., in Luzerne co. It stands on the Susquehanna river, 7 m. S.W. of Wilkes-Barre, and is served by the Pennsylvania and other rlys. Anthracite coal is extensively worked, and hosiery, silk and cigars are manufactured. Nanticoke was incorporated in 1874. Pop. 22,600.

Nantucket. Town of Massachusetts, U.S.A., the co. seat of Nantucket co. It stands on the N. coast of Nantucket island, which with adjacent islands forms the co., has steamboat communication with several ports on the mainland and neighbouring islands, and is served by a narrow gauge rly. Pop. 2,800. The island covers an area of 48 sq. m. Agriculture and fishing are carried on by the inhabitants.

Nantwich. Urban dist. and market town of Cheshire. It stands on the Weaver, 161 m. from London, and 4 m. from Crewe, and is served by the G.W. and L. & N.W. Rlys. The chief building is the old cruciform church of S. Mary and S. Nicholas. There are a 17th century grammar school and some old houses. The industries include the manufacture of boots, shoes, and clothing. Nantwich is a hunting centre and has a spa. For long it was the centre of the salt industry, but this has now disappeared. Nantwich had fairs and markets in the Middle Ages, and the salt was worked very early. The works were especially prosperous in the 16th-18th centuries, after



Nantwich arms

which they declined. Shoes and gloves were also made at this time. Market day, Sat. Pop. 7,800. See A History of Nantwich, J. Hall. 1883.

Nantyglo. District of Monmouthshire, England. It is 7 m W.S.W. of Abergavenny, on the G.W.R., and has extensive collieries and important ironworks. The water supply is controlled by the council of the urban dist. of Nantyglo and Blaia, of which Nantyglo forms part. Market day, Wed. Pop. 15,400.

Nantymoel. Village of S. Wales, in Glamorgan. It is 10 m. N. of Bridgend, the terminus of a branch rly., on the G.W.R. It lies at an alt. of 650 ft., near the source of the small river Ogwr. To the E. is Carn fawr, 1,769 ft.

Naomi. Character in the O.T. book of Ruth (*g.v.*). Wife of Elimelech, of Bethlehem-Judah, she lost her husband and two sons in the land of Moab, whither the family had fled through famine. Returning to her native land, her many sufferings caused her to say, Call me not Naomi (pleasant); call me Mara (bitter).

Naoroji, DADABHAI (1825-1917). Indian politician. Born at Bombay, Sept. 4, 1825, the son of a



Dadabhai Naoroji,
Indian politician

Parsee priest, he was educated at Elphinstone school and college. He returned to it in 1854 as professor of mathematics and natural philosophy, an appointment he held until 1855, when he went to England to engage in business. Naoroji unsuccessfully contested the Holborn division of Finsbury as a Liberal in 1886. Elected in 1892 for Central Finsbury, the first Indian member to sit in the British House of Commons, he lost his seat in 1895. In 1886 and 1893 he was president of the Indian national congress. He died at Bombay, July 1, 1917. He published *Poverty and Un-British Rule in India*, 1901, and other works dealing with Indian problems.

Nap or **NAPOLEON.** Card game. It is played with a full pack, the cards bearing the same value as in whist. The dealer deals five cards to each player, usually three to five in number, the one on his left having first call. There are calls of two, misère (in which the caller undertakes to lose every trick), three, four, and five, the latter being known as "nap." The player calling the highest, leads,



Nantwich, Cheshire, Cruciform parish church of
St. Mary and St. Nicholas

and endeavours to make his tricks; he chooses his own trumps, the first card he plays indicating of which suit. If he makes all his tricks he receives payment according to the number of his call; or, failing, has to pay each player in the same proportion. It is usual for the caller of "nap," when successful, to be paid double stakes. Also it is sometimes arranged beforehand that a player going "nap" may have the option of picking up the top card of the remainder of the pack and substituting it for one of his original five, if so disposed.

Napata. Ancient Nubian city on the right bank of the Nile, under Mount Barkal, below the 4th cataract. An early centre of Sudanese trade, it became the S. frontier of XVIIIth-dynasty Egypt, and immigrant Theban priests established control over the independent Ethiopian kingdom which gave Egypt its XXVth dynasty. The slender pyramids, Amon temple, and funerary shrine of Taharka (2 Kings, 19) are essentially Egyptian. See Meroë.

Naphtali. Name of one of the ten northern tribes of Israel, and of its traditional ancestor, the sixth son of Jacob. He was Bilhah's second son, Gen. xxx, 7, 8. The tribe was settled in fertile territory W. and N.W. of the Sea of Galilee, and was among the first to be led into captivity (2 Kings, 15; Isaiah, 9).

Naphtha. Strictly, liquid bitumen. Originally the word was used for the inflammable liquid which exuded from the soil in certain parts of Persia; and so for any mineral oil of the E.

Properly the term should be confined to, first, the pure and limpid oil which is yielded by certain of the wells of the Caspian, the specific gravity of which ranges between 0.700 and 0.850, and is known as native naphtha; and, secondly, to one of the products yielded in the

distillation of crude petroleum. This latter naphtha, having a specific gravity of about 0.700, is much used for cleaning purposes, including the cleansing of oil wells themselves, for making oil cloths, and illuminating gas, and for adulterating ordinary lamp petroleum or kerosine. It has been introduced

into soap, and undoubtedly assists its cleansing properties owing to its affinity for grease. See Petroleum.

Naphthalene. White solid hydrocarbon, with a characteristic smell, one of the products of the dry distillation of coal. The coal tar of gas works is the chief source of naphthalene. It was discovered by Garden in 1819 in coal tar, and its chemical composition was investigated in 1826 by Faraday, who assigned to it the formula $C_{10}H_8$. It forms from 5 to 10 p.c. by weight of crude coal tar, and is obtained on the large scale from the "middle-oil" fraction obtained by distilling coal tar, the oil containing about 30 p.c. of naphthalene. The crude product is purified by treating it with caustic soda to remove phenol and again distilling. The crystalline mass obtained is separated from adhering oil by means of a filter press.

Naphthalene is employed for making sulphonic acids, naphthols, and naphthylamines needed in the dyeing industry, and especially for the manufacture of phthalic acid required for synthetic indigo and eosin dyes. It is used also for enriching or carburetting water-gas to make it luminous, and as alcohols for increasing the luminosity of coal gas. Naphthalene is a powerful antiseptic, and preserves woollen goods and furs from moths.

Naphthol, ALPHA AND BETA. Solid hydrocarbons, closely related to the phenols in their chemical properties. The chemical formula for the naphthols is $C_{10}H_7OH$. Alpha-naphthol was first made by Griess in 1867 by the action of nitrous acid on alpha-naphthylamine. Beta-naphthol is prepared from sodium beta-naphthalene-sulphonate. Both the naphthols are powerful antiseptics, and are used as the starting-point in the manufacture of important aniline dyes. Alpha-naphthol is employed to preserve the albumen used in calico printing.

Naphthylamine OR AMIDO-NAPHTHALENE. Hydrocarbon with the chemical formula $C_{10}H_7NH_2$. There are two naphthylamines, alpha and beta. Alpha-naphthylamine has a disgusting odour, while beta-naphthylamine is odourless. Both are employed in the manufacture of aniline dyes.

Napier. Town and port of North Island, New Zealand. The capital of Hawke's Bay district, it is in a pastoral country. It has both rly. and steamer communication with Wellington (200 m.) and Auckland (372 m.). Pop. 8,700.

Napier, BARON. Scottish title. The first holder was Sir Archibald Napier 1576-1645, 9th baron



1st Baron Napier, Scottish agriculturist

Merchiston, who gained celebrity in Scotland for his agricultural experiments, and followed James I to England in 1603. In 1623 he became lord of session, and in 1627 was created baron

Napier of Merchiston. Both he and his son, Archibald (d. 1658), 2nd baron, were closely associated with Montrose.

His son, Archibald, the 3rd baron, died unmarried in 1683, when his nephew, Thomas Nicolson, succeeded to the title. The next holder was the 3rd lord's sister, Margaret, from whom it descended to her grandson, Francis Scott, who took the name of Napier. The title is still held by his descendant, Baron Napier and Ettrick.

Napier OF MAGDALA, ROBERT CORNELIS NAPIER, 1ST BARON (1810-90). British soldier. Born at

Colombo, Ceylon, Dec. 6, 1810, he entered the Bengal Engineers in 1826, and having specialised in engineering, became chief engineer of the Punjab in 1849. During

the Mutiny his work as chief engineer to Sir Colin Campbell brought him a K.C.B. In the Chinese War, 1860, he held a command, but his most notable military service was his conduct of the campaign in Abyssinia, 1868, which brought him a peerage. From 1870-76 Napier was commander-in-chief in India. He died Jan. 14, 1890. See Hist. of the Abyssinian Expedition, C. R. Markham, 1869.



Baron Napier of Magdala, British soldier

Napier, SIR CHARLES (1786-1860). British admiral. Born March 6, 1786, he entered the navy



Sir Charles Napier, British admiral

in 1799, saw active service, and in 1810 was with the army in the Peninsula. Returning to the navy, he performed some daring exploits in the Mediterranean.

In 1833 he was given command of the Portuguese fleet in opposition to Dom Miguel, whose squadron he defeated. He was hailed as the liberator of the country and raised to the Portuguese peerage, but resigned on the rejection of his proposals for naval reform. He commanded the troops ashore on the Syrian coast in 1840, and was made a K.C.B. for the capture of Acre, where he was second-in-command. His command of the Baltic Fleet in 1854 was only partially successful. He died Nov. 6, 1860.

Bibliography. War in Portugal, 1830; War in Syria, 1842; The Navy: Its Past and Present State, 1851; Life and Correspondence, Gen. E. Napier, 2 vols., 1862.

Napier, SIR CHARLES JAMES (1782-1853). British soldier. Born in Whitehall, London, Aug. 10,

1782, a grandson of the 5th Lord Napier of Merchiston, he entered the army, 33rd regiment, in 1794, but, except

when dealing with the insurgents in Ire-

land, saw no active service until 1808. He commanded the 50th Foot in the retreat to Corunna, was seriously wounded, and taken prisoner. Released on parole, he was formally exchanged in 1810, and in the following year returned to the Peninsula. In 1815 he took part in the Waterloo campaign, though not present at the actual battle. He was appointed governor of Cephalonia in 1822, but his life was comparatively uneventful until, in 1841, he sailed for India to take command in Sind. After a campaign Sind was annexed, and Napier was appointed governor of the new province, to the reorganization of which he devoted himself successfully. He rendered further military service in the Sikh war of 1848, and was commander-in-chief in India, 1849-51. He died at Oaklands, near Portsmouth, Aug. 29, 1853. His



Sir C. J. Napier, British soldier
After E. Williams

life was written by his brother, Sir William, while his own writings include Lights and Shadows of Military Life, 1840.

Bibliography. Lives, W. F. P. Napier, 4 vols., 1857; W. N. Bruce, 1885; W. F. Butler, 1890; Records of the Indian Command of Gen. Sir C. J. Napier, J. Mawson, 1861.

Napier, JOHN (1550-1617). Scottish mathematician. Born at Merchiston Castle, near Edinburgh, and afterwards the 8th laird of Merchiston, his first mathematical work, De Arte Logistica, suggested that he had discovered a method of solving equations of the second and higher degrees. About 1594 he began to lay the foundations of his great discovery, logarithms, upon which he worked for the next twenty years. In connexion with them he suggested the present notation for decimals. His tables were published 1614, under the title Mirifici Logarithmorum Canonis Descriptio. He died April 4, 1617. See Briggs, H.; Logarithma.



John Napier, mathematician

Napier, SIR WILLIAM FRANCIS PATRICK (1785-1860). British soldier and historian. A son of George Napier, and a grandson of the 5th lord Napier of Merchiston, he was born Dec. 17, 1785. He entered the army in 1800, and in the 43rd regiment served at the siege of Copenhagen, 1807, before proceeding to Spain, where he was present at Corunna. In 1813-14 he was in command of his regiment which formed part of the Light Brigade. Knighted in 1848, he was promoted general in 1859, and died Feb. 10, 1860. Napier is the author of one of the greatest military histories ever written. His History of the Peninsular War was begun in 1823, and the six volumes appeared between 1828 and 1840.

Naples (Ital. *Napoli*). Maritime prov. of W. Italy, in Campania. It curves round the Bay of Naples, and includes the islands of Ischia, Capri, and Procida. A fertile plain in the N., elsewhere it is mountainous, rising in Mt. Vesuvius to about 4,000 ft. It terminates in the S.W. in the promontory of Sorrento. Area 351 sq. m. Pop. 1,360,300.

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Sir W. Napier, British historian
From a miniature

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NAPLES: THE CITY AND THE KINGDOM

Cecil Headlam, M.A., Author of *Venetia* and *Northern Italy*

The article on the city is followed by one on the former kingdom of which it was the capital. See Europe: Italy: the articles on Ferdinand; Francis and other rulers; Masaniello and other biographies; also Bourbon; Carbonari

Naples is a city and port of Italy and capital of the province of Naples. Stretching along the N.



Naples arms

side of the Bay of Naples, it is perhaps the most beautifully situated city in Europe. Seaward, the bay is protected by islands, Procida, Ischia, and Capri. Inland, a mountain chain, hemming in the Neapolitan Campagna, runs down to Sorrento. Rising out of this rich plain the vast cone of Vesuvius towers over the E. suburbs, Portici, Resina, and Torre del Greco, whose villas, vineyards, and orange groves are set upon deposits of lava. To the W. lie the volcanic headland of Posilipo, and Pozzuoli, pierced by sulphurous grottoes and tunnels, the volcano Solfatara, Baia, and the promontory of Miseno. Close to Baia, a volcanic eruption in 1583 flung up Monte Nuovo in a single night, and almost drained the Lucrine lake which, with Lake Avernus, formed the Portus Julius of the Roman fleet. The climate is delightful, the temperature varying from 26°F. in Jan. to 97°F. in July. The rainy season lasts from Jan. to March.

Naples is an important manufacturing centre, making ships, cars, locomotives, glass, cotton, wool, gloves, perfumes, linen, and silk. The chief imports are coal, steel, lumber, grain, cotton, wool, leather, oils, wines, and chemicals; the chief exports, wine, brandy, fruits, nuts, paper, hemp, and cereals. Architecturally, Naples has little of interest. The flat roofs of the houses (*astrici*), which serve as summer lounges, give the town an almost eastern appearance. The Porta Capuana, with its Renaissance gateway, 1484, and two round towers, indicate the vanished walls. Three narrow, straight streets (Strada de' Tribunali, etc.) piercing a quadrangle of crooked alleys, are the Decuman Ways of the Roman town.

The modern quarter, built along the magnificent curve of the Riviera de Chiaia, lies to the W. of a mountain ridge which runs down from Capodimonte and the Castle of S. Elmo, to the Pizzofalcone promontory. Along this Riviera lie the Villa Nazionale, a charming

public garden bordered by the Via Caracciolo, and the famous Marine Aquarium belonging to the Zoological Station founded 1872. At the foot of Pizzofalcone is the historic egg-shaped Castello dell'Uovo, begun 1154, on an islet. From the Corso Vittorio Emanuele, which winds along the hillside, grand views across the town and harbour are obtained, though the finest of all is afforded by Belve-

widened, electric trams installed, and a new water supply and drainage system introduced.

The Via Roma, the old Via Toledo, running N. and S. is the main fashionable thoroughfare. It leads down from the Bellini theatre, the Piazza Dante, and the Museum to the Palazzo Reale and the old round towers of the Castel Nuovo, dating from 1283 and renovated 1905. Close at hand is the San Carlo theatre.

The Museo Nazionale, formerly the seat of the university, contains the Farnese and other collections (Farnese Bull, Dying Gladiator, Hercules, etc.), and innumerable masterpieces of antiquity and relics



Naples. Plan of the central part of the city showing docks and harbour

dere, in the Carthusian monastery of San Martino, within the walls of S. Elmo.

The remains of the medieval city are among the narrow fetid streets of the commercial part of the town to the E. of the ridge. The Strada Sta. Lucia is a typical centre of the noisy, dirty, picturesque, and surprising life of the lower classes, so vividly depicted in the novels of Matilde Serao. After the cholera epidemic of 1884 among the densely populated and insanitary streets, a huge scheme of reconstruction has begun. The streets have been

from the excavations at Herculaneum, Pompeii, and elsewhere.

The cathedral, built 1272-1323, but repeatedly modernised, contains the tombs of Charles of Anjou and Pope Innocent IV, as well as the alleged blood of S. Januarius, which liquefies thrice a year, portending good or evil fortune, according as the process is rapid or slow. The basilica of S. Restituta, on the site of a temple of Apollo, adjoins the W. aisle.

The coffins of the house of Anjou lie in the sacristy of S. Domenico Maggiore, closely connected with S.



1. Typical street scene in the Santa Lucia quarter.
 2. Piazza Dante and the Vittorio Emanuele school.
 3. Piazza del Plebiscito, showing part of the colonnade of S. Francesco di Paolo, with castle of S. Elmo in

background. 4. S. Carlo Theatre, a famous opera house. 5. Royal Palace, built in 1600. 6. West front of cathedral of S. Januarius, rebuilt 1877-1905. 7. City and bay from Vomero, looking towards Vesuvius

NAPLES: VIEW OF THE CITY AND SOME OF ITS ARCHITECTURAL FEATURES

Thomas Aquinas. A tall brick campanile in the Strada Tribunali is the remnant of a church built by Bishop Pomponius in 514. In San Lorenzo Boccaccio first beheld and loved Fiammetta. There are interesting catacombs of the 1st century behind S. Gennaro. At the university, founded by the emperor Frederick II in 1224, S. Thomas Aquinas lectured. Reorganized in 1781, it has now over 7,000 students, chiefly of law and medicine. In the Piazza Mercato, outside the church of Santa Maria del Carmine, Conradino was executed, and is buried in the church. Pop. 698,000.

Naples was founded by Greek colonists and was first called *Parthenopé*, or Virgin City, after a siren said to have been drowned upon the coast. Re-settled by later emigrants from Greece, it was named *Neapolis*, or the New City. Conquered by the Romans, 326 B.C., the beauty of its site and the mineral springs of Baiae, in the western corner of the gulf of Pozzuoli, rendered it and its environs a favourite seaside resort under the Empire. Baths and villas, built along the shore, encroached even upon the sea. Marius, Pompey, and Julius Caesar had houses at Baiae. Horace loved the place; and here Virgil lived, and chose to be buried. The tomb of Virgil is placed in the Grotta di Seiano, which was cut through the rock of the hill of Posilipo in Roman times.

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The Kingdom of Naples

Naples was also the capital and name city of a kingdom which existed 1138-1860. The Goths, who had occupied Naples on the fall of the Western Empire, were expelled by Belisarius on behalf of Justinian in 536. It was retaken by the Goths under Totila, 543, but recovered by Narses ten years later. As a Byzantine duchy, Naples opposed the Lombard duchy of Benevento, and became practically independent. Enriched by sea-borne commerce with the East, before Venice, Pisa, Leghorn, and Genoa supplanted her, the maritime city offered a tempting prey to the Saracens from Sicily. It was conquered by Roger of Sicily in 1130, and then became a kingdom.

The Norman kingdom of Naples and Sicily, which included all S. Italy, held as a fief of the Holy See, passed through Constance, the

Norman heiress, to the Hohenstaufen line. The emperor Frederick II was succeeded in the Two Sicilies, as the kingdom was called, by his illegitimate son, Manfred. The pope, however, offered the inheritance of Naples to Charles of Anjou, by whom Manfred was defeated and slain at Benevento, 1266.

The Angevins continued to hold the kingdom of Naples after the Sicilian Vespers had ousted them from Sicily. The dynasty died out with Joanna II, whose evil life still remains a byword. Alfonso V, king of Aragon and Sicily, whom she had once adopted as heir, seized the kingdom upon her death, 1435. After a long struggle with the French, he was acknowledged king of the Two Sicilies in 1443, and bequeathed his Neapolitan kingdom to his cruel and avaricious bastard, Ferrante, or Ferdinand, 1458.

French and Spanish Struggles

Joanna I having no issue, had finally adopted her cousin Louis, duke of Anjou. His rights, passing to Louis XI and Charles VIII of France, formed the pretext for the French invasion of Italy. Charles VIII occupied Naples Feb.-May, 1495. When the French were expelled from Italy, the Aragonese returned to Naples. But Louis XII joined with Ferdinand of Spain against his kinsman Frederick, took and sacked the capital. They fell out over the spoils. Thereupon the Spanish general, Gonzalo de Cordova, ejected the French after the battle of the Garigliano, 1503, and Naples became henceforth a Spanish province.

Before the battle of Lepanto, 1571, restored Spanish supremacy in the Mediterranean, Naples suffered much from raids by the Turks. In 1647 occurred the revolt of Masaniello. Another rising, under Gennaro Annesse, was ruthlessly suppressed by Don John of Austria, to whom Gennaro betrayed the city, after the duke of Guise had come, at his invitation, to regain the possessions of the House of Anjou. By the war of the Spanish Succession, Naples, wrested from Spain, passed to the Austrian Emperor, Charles VI, in 1713. But during the war of the Polish Succession, Don Carlos, second son of the Bourbon Philip of Spain, invaded the Two Sicilies, and by the treaty of Vienna, 1738, was recognized as King Charles II. Under the Spanish Bourbons, Naples remained in a state of medieval barbarism. The people were oppressed, poor, ignorant, and lazy; the city teemed with *lazzaroni*, the country with bandits, beggars, and priests. An at-

tempt by Ferdinand IV to expel the French Republican armies from the Papal States was followed by the creation of the Parthenopean Republic in Jan., 1799.

Bourbon Restoration

Ferdinand was restored next year by a Calabrian army under Cardinal Ruffo, supported by the British fleet, and even after Marengo, thanks to the intervention of Paul I of Russia, he was still allowed to reign. Napoleon, however, turned out the Bourbons in 1806, and made first his brother Joseph, and then his general, Joachim Murat, king of the Two Sicilies, 1808. Murat, in spite of Napoleon's military and financial exactions, introduced some reforms before he attempted to lead a revolt in favour of Napoleon, and was forced to flee, May, 1815.

Ferdinand IV, returning as Ferdinand I, king of the Two Sicilies, gave fair promises of freedom and reform, while secretly binding himself to Austria not to introduce constitutional changes other than those allowed in the Austrian dominions in Italy. The administration remained corrupt and oppressive as ever. A military rising in 1820, joined by the members of the Carbonari (*q.v.*), and led by General Pepe, wrung the concession of a constitution from the treacherous tyrant; but the Bourbon absolutism was restored by Austrian bayonets. This oppressive and despotic government was continued by Francis I and Ferdinand II, nicknamed Bomba, who quelled a rebellion in 1823, and in Jan., 1848, yielding to a series of revolutionary outbreaks, granted a constitution. But after a period of wild disorder, the constitution ended in a massacre, May 15, 1848. Ferdinand took ferocious vengeance upon the champions of liberty, which called forth the denunciations of Gladstone, and was checked by British intervention.

At length the emancipation of Italy put an end to Bourbon misgovernment. Garibaldi, landing in Sicily, made his way to the capital, whence Francis II had fled, Sept. 8, 1860. Disregarding the Mazzinian democrats, he hailed Victor Emmanuel as king of Italy, and the people of Naples and Sicily voted themselves a part of the Sardinian kingdom, Oct. 21.

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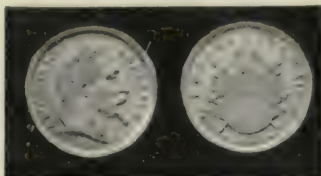
Naples, Bay of. Semi-circular opening of the Mediterranean Sea, on the S.W. coast of Italy. Its maximum width is 20 m. between the capes of Miseno on the N. and Campanella on the S. It is backed by Mt. Vesuvius and Monte Sant' Angelo, and on its shores lie the towns of Sorrento, Castellamare, Pozzuoli, Torre del Greco, and Portici, besides the city of Naples. Off the N. extremity of the bay are the islands of Ischia and Procida, and on the S. is Capri.

Naples Yellow. Basic lead antimonate used as a yellow colour in oil painting. It is also known as antimony yellow or Paris yellow. The colour is completely stable as regards weather conditions, and it is also used for glass and porcelain painting.

Napo. Large river of S. America. A tributary of the Amazon, it rises N. of the volcano Cotopaxi in Ecuador, and flows E.S.E., forming part of the provisional bound-

ary between Ecuador and Colombia, and falling into the Amazon some 50 m. below Iquitos. Its course is about 750 m., nearly 400 m. of which are navigable. Its important affluents include the Coca, Aguairico, and the Curaray. The town of Napo stands on its banks.

Napoleon. French gold coin. It was first issued by the great emperor, hence its name. Its



Napoleon. Obverse and reverse of gold coin of Napoleon III. $\frac{1}{2}$ actual size

value was 20 francs, nominally 15s. 10d., and its weight 6.45 grammes. It replaced the louis d'or and is now obsolete. See Louis

armada seized Malta. Sailing thence, and evading Nelson's pursuit, he landed near Alexandria, took that city by storm, and overthrew the Mamelukes at the battle of the Pyramids.

Battle of the Nile

The occupation of Cairo without resistance completed his triumph, and he set to work, with Roman ingenuity and thoroughness, to organize his conquest. In the Institute of Egypt, divided according to subjects, he applied the energies of the French *savants*, whom he brought with him, to the task of exploring Egypt, developing its resources, and beginning a revival of learning. The discovery of the Rosetta Stone and many other relics of the age of the Pharaohs shed distinction on the whole enterprise and stamped it with the originality of Napoleon's genius. But Nelson shore asunder the scheme of a French Oriental empire. At the battle of the Nile, Aug. 1, 1798, he annihilated the French fleet and cut off Bonaparte from communication with France, but Napoleon succeeded in evading the British cruisers and landed in the south of France on Oct. 9, 1799, when the failure of his enterprise was still unknown, and the perils of an Austrian invasion roused discontent with the Directory.

Napoleon accordingly found it easy to concert with Talleyrand, Murat, and Lucien Bonaparte in the overthrow of the Directory. On the ruins he and his friends constructed a strongly personal system in which he, as first consul, held all the executive and much legislative power. But the new personal government ended the strife of factions, and effected much-needed changes by reconciling all but the irreconcilable royalists, by undertaking useful public works, by initiating the codification of French law, and by healing the schism in the Church by what was known as the concordat of April 18, 1802. He thus earned the title of the restorer of the altars, while he restored the prestige of French arms by his brilliant passage of the Alps, and the victory of Marengo. Britain, also, was fain to come to terms in the treaty of Amiens, March 23, 1803.

By instituting prefects in every department Bonaparte curbed democratic local government; while his foundation of the legion of honour paved the way for the subsequent restoration of an order of nobility. Other institutions due to his organizing genius were the bank and university of France.

The vain attempt of the royalists to foment a plot against his life, early in 1804, was cleverly

NAPOLEON BONAPARTE

J. Holland Rose, Litt.D., Author of *The Life of Napoleon*

This sketch of the great Corsican is followed by an article on the Napoleonic Campaigns. Further information will be found in the articles Europe; France; French Revolution. See the article Bonaparte and those on Napoleon's marshals, e.g. Murat; Ney; Soult; also Josephine; Nile; Trafalgar, etc.

Born at Ajaccio, Aug. 15, 1769, the second surviving son of Charles and Letizia Bonaparte (née Ramolino), Napoleon came of an Italian stock, long domiciled in Corsica. Sent to school at Brienne, in 1785 he became lieutenant in the La Fère artillery regiment, and in various garrison towns displayed zeal for the service. He passed much of his time on furlough in Corsica during the early period of the Revolution, and his studies of Rousseau disposed him to accept the new democratic doctrines. Long and confused struggles with the Paolist or monarchist faction in that island ended in his discomfiture, and, with his family, long fatherless, he fled to France in June, 1793.

Royalist Rising of 1795

The new republic badly needed able officers, and the ability with which Napoleon organized and directed its artillery during the siege of royalist Toulon largely contributed to the recapture of that city. Though disgraced and imprisoned for a short time, after the fall of Robespierre, July, 1794, the young Jacobin regained his position in the army, and strengthened it during the campaign in the Italian Riviera. Another sharp setback to his fortunes failed to daunt him. His chance came in Sept., 1795, when the republic was confronted by a serious royalist rising

in Paris, which he helped to crush. Soon after, he was captivated by a fashionable young widow, Josephine de Beauharnais, whom he married.

The Italian Campaign

Napoleon then set out on his Italian campaign, in which he forced Sardinia to surrender, defeated a succession of Austrian armies, overran Tuscany, compelled the pope and the king of Naples to sue for peace, and then pushed back the Austrians and made the emperor a suppliant for terms. He crushed Venice and divided its territories between Austria and France. He began the Italian campaign an almost unknown general, received with murmurings by his subordinates. At the end of 1797 he had generals and troops absolutely at his disposal, he had ransacked the museums of Italy for their art treasures, which he sent to the Louvre, he had dictated terms to pope and emperor, and France acknowledged him as her greatest warrior.

The Directory at Paris urged him either to invade England or conquer the East. He chose the latter and secretly prepared a great armada. The military occupation of Rome and of the central cantons of Switzerland having provided part of the funds for the enterprise, he set sail from Toulon in May, 1798, with a large fleet. Strengthened by squadrons from Italy, the

countermined by him and his police; and the result was the capture of the chief plotters. The obsequious senate begged him to re-establish hereditary rule, in order "to defend public liberty, and maintain equality." In Aug., 1802, he had secured the consulate for life, with power to name his successor. On May 18, 1804, he became emperor of the French, and the coronation ceremony at Notre Dame on Dec. 2, at which the pope poured on the holy oil, showed that all the splendour and prestige of the old monarchy was to reappear. The last traces of the republican constitution soon vanished. These last successes of the autocrat were due to his military triumphs in the war which broke out, first with England, in May, 1803, and with Austria and Russia in the summer of 1805. The struggle with Britain in 1803-5 was entirely naval, ending at Trafalgar.

The years between 1805 and 1815 were passed mainly in warfare. Having received the surrender of Mack and 70,000 Austrians at Ulm, Napoleon occupied Vienna, and gained his greatest victory at Austerlitz. He then bestowed the title of king on some of his South German allies, declared the Holy Roman Empire at an end, and formed the confederation of the Rhine. Prussia rushed to arms in Sept., 1806, only to be utterly overthrown at Jena and Auerstädt, Oct. 14, 1806. When the tsar Alexander I came to her assistance, the Allies were completely routed at Friedland, June 14, 1807.

The Disaster of 1812

Master of Central and Western Europe, Napoleon now imposed his brother, Joseph, on the throne of Spain; Britain espoused the cause of the Portuguese and Spanish patriots, and, in the campaigns of 1808-13, Wellington struggled bravely against the armies hurled at him by Napoleon. Thenceforth the Russians and Germans took hope; and in 1812 Napoleon met with his great disaster in Russia.

The remainder of his story must be briefly told. In succession Prussia and Austria rose up against him, and the campaign of 1813 resulted in his expulsion from Germany. Wellington, with British, Spanish, and Portuguese troops, made swift progress in the S., while in the E. the masses of the Allies closed in on Paris. They occupied Paris, and his own marshals and generals finally compelled him to abdicate in favour of his son, Napoleon II, who never reigned. While the fallen emperor retired to Elba, the child and his

mother, Marie Louise of Austria, married to him after he had divorced Josephine at the close of 1810, came under the influence of the Hapsburg court.

The disputes of the powers over the spoils of conquest gave to Napoleon one more chance. He escaped from Elba in Feb., 1815, landed at Antibes, and in a few days entered Paris in triumph; his rival, Louis XVIII, fled into Belgium. But France was resolved to accept Napoleon only as a constitutional monarch, and the powers declared him an outlaw for disturbing the peace of Europe. The emperor's abdication followed Waterloo within a week, and, his effort to escape to America having failed, he surrendered to the British government, which sent him to St. Helena.

His last years were spent there with a few chosen comrades, whom he entertained with his unfeigned flow of conversation, often captious and querulous, but always brilliant. He also compiled *Memoirs and Notes* of much interest but of doubtful veracity. Quarrels with Sir Hudson Lowe were often pushed to unreal and undignified extremes.

Why Napoleon Failed

We are now able to see that amidst transcendent qualities there were mingled pettier traits—a devouring egotism, a hard view of life as a series of calculations and chances; above all a profound contempt for the average man, and a disbelief both in religion and in the higher possibilities of progress of the human race. His mechanical view of life, abundantly proved in Gourgaud's *Journal*, reveals the inner reason why he failed to rise to the full height of that unparalleled opportunity offered by the years that followed the French Revolution. On May 5, 1821, Napoleon died at St. Helena. In 1840 his remains were taken to France and laid in a magnificent tomb in the *Hôtel des Invalides*. See *Arcola*; *Art*; *Caricature*; *Cenis*; *Invalides*; *Longwood*, etc.

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Napoleon II. Title given by French imperialists to the only son of Napoleon I, better known as the duke of Reichstadt (q.v.).

Napoleon III (1808-73). Emperor of the French. Charles Louis Napoleon Bonaparte was born in



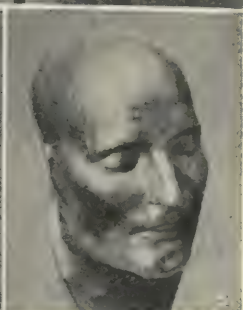
Napoleon III,
French emperor

Paris, April 20, 1808, the third son of Louis Bonaparte, by Hortense, daughter of Josephine, and was thus nephew to Napoleon I. On the fall of the empire Hortense took her sons into exile.

His elder brothers having died, the death of the duke of Reichstadt in 1832 made Charles Louis, or Louis Napoleon as he was now styled, head of the Bonapartes. Fostering the Napoleonic legend in France by a series of pamphlets and secret machinations, he organized a mutiny at Strasbourg in 1836, on the failure of which he fled to New York, only to return the following year to Switzerland. In 1838 he moved to London, and in 1840 risked a landing at Boulogne, but was arrested and sent to the fortress of Ham.

Making his escape from Ham in 1846, Louis Napoleon went to London, where he remained until the revolution of 1848. He then began to reap the fruits of his long years of conspiracy and propaganda. Elected a member of the republican assembly in June, he was elected president on Dec. 10 by a majority of five to one. On Dec. 2, 1851, he effected the *coup d'état*. From the 10 years' presidency conferred on him by plebiscite, it was an easy step to the imperial throne, which he ascended Dec. 1, 1852.

The following year Napoleon married Eugénie de Montijo, and established a court which has seldom been surpassed for its splendour and extravagance. He joined England in the Crimean War, 1854-56; he assisted Piedmont to turn the Austrians out of N. Italy in 1859, and gratified French ambition by obtaining Savoy and Nice. Meanwhile things were going from bad to worse. The enmity of the Roman Catholics after his interference in Italy, his failure to establish a Latin empire in Mexico, the increasing hostility of Bismarck, and the necessity of establishing the empire on a firmer foundation than that of popular applause, perplexed Napoleon, who behind his mask of inscrutability was weak and undecided. It was with half-hearted desperation that



Buonaparte
Napoleon

1. Painted in 1791, said to be the earliest in existence.
2. By Baron Gros. During the first Italian campaign.
3. From the miniature by Chatillon. As Emperor.
4. By Vernet, now in the Tate Gallery, London.
5. After the painting made in 1837 by H. Delaroche.
6. By Francois, after Delaroche, 1845. After abdication.

April 12, 1814. 7. By Sir C. Eastlake. On the Belle-rouphon. 8. Death Mask, from a secondary mask, taken by Dr. Antomarchi from that taken by Dr. Burton immediately after Napoleon's death. At bottom right-hand corner are two signatures of the Emperor: above, Buonaparte; below, Napoleon

NAPOLEON BONAPARTE: PORTRAITS AND DEATH MASK OF THE EMPEROR

he embarked on the Franco-Prussian War (q.v.). He joined his army July 28, 1870, but five weeks later came Sedan, his surrender to the Prussians, Sept. 2, and the end of the empire. Napoleon was taken to Wilhelmshöhe, where he remained until the end of the war, when he joined the empress and their son at Chislehurst in England. There he died, Jan. 9, 1873, and was buried at Farnborough.

Bibliography. Works, 5 vols., 1856-60; Lives, W. A. Fraser, 1895; A. Forbes, 1898; Napoleon the Little, V. Hugo, 1852; Histoire du Second Empire, P. de la Gorce, 1894; Napoleon III at the Height of his Power, A. L. Imbert de Saint-Amand, Eng. trans. E. G. Martin, 1900; The Rise of Louis Napoleon, F. A. Simpson, 1909.

Napoleon, EUGÈNE LOUIS JEAN JOSEPH (1856-79). French prince, known as the Prince Imperial.



Napoleon,
Prince Imperial

Only son of Napoleon III and the Empress Eugénie, he was born in Paris, March 16, 1856. He went through a military training at Woolwich, 1872-75, and after his father's death in 1873 was recognized leader of the Bonapartists. He joined the British expedition to Zululand, 1879, and was killed near Ulundi, June 1 of that year.

THE NAPOLEONIC CAMPAIGNS

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Following the biography of Napoleon, this article deals in more detail with the campaigns he directed. See also the articles on the various battles, e.g. Austerlitz; Friedland; Marengo; Waterloo; also Peninsular War

Napoleon's first great campaign was in Italy in 1796. The W. and S. faces of the mountains of N. Italy marked the fronts of the opposing armies. On the W. face the armies neutralised each other, while the French army of Italy was extended along the mountains parallel to the coast between Nice and Genoa. In about an equality of numbers the allied Austrians and Sardinians held the passes.

In one short month he carried out his plans, and forced the Sardinians to a separate peace. He then pushed on against the Austrians and forced them to peace within the year, which left him conqueror of Italy. This, his first great campaign, was typical of his strategy: a well-thought-out plan, rapidly and ruthlessly carried out, his intentions veiled until the moment for execution, and then a swift and decisive blow.

On these lines 1798 saw his capture of Malta and his brilliant campaign in Egypt, but also the battle of the Nile, which cut him off from France. In 1799 he invaded Palestine, but was stopped at Acre by Sydney Smith. Seapower defeated generalship, and, leaving his army behind him, he escaped to France.

Napoleon secretly collected an army in Switzerland, crossed the St. Bernard, and severed the Austrian communications. Melas, the Austrian commander-in-chief, on hearing of this blow, delayed for the surrender of Genoa, then fought at Marengo with his front towards Austria, was defeated, and surrendered with his whole army,

and for the second time in five years Napoleon conquered Italy.

War broke out again in 1803 with Great Britain, whose government, by 1805, had built up a coalition with Russia and Austria. Napoleon had been ostensibly preparing to invade England, but he could never obtain the necessary uninterrupted command of the Channel. On August 25, 1805, he decided to transfer the army to the Rhine, rapidly passed the Black Forest, and, before Mack in Ulm could be joined by the Russians, or realize his danger, he found himself surrounded, and capitulated with his whole army the day before Trafalgar. Napoleon followed up Ulm with the campaign of Austerlitz, where he defeated the Austrians and Russians on Dec. 2, 1805. The treaty of Pressburg, Jan. 1, 1806, forced Austria away from the second coalition.

Jena and Auerstädt

All through 1805 Prussia had been hesitating whether to join the coalition, and, too late for success, on Oct. 1, 1806, she declared war. On Oct. 14 she was defeated at Jena and Auerstädt; on the 25th the French entered Berlin, and Prussia lay at Napoleon's feet. This might be considered as the summit of his irresistible success. He had conquered Italy and Germany; Switzerland and Holland were in his hands, but England's seapower set a limit to his European and Asiatic schemes of conquest. He had paralysed the older school of Austrian and German generals by his strategy and tactics.

The king of Prussia, though the greater half of his kingdom was in Napoleon's hands, did not sue for peace, and Sweden and Russia helped to carry on the struggle. The battle of Eylau, Feb. 7 and 8, 1807, has been claimed as a Napoleonic victory, but it was fiercely contested, and the French losses were equal to the Russian. At Friedland, June 14, 1807, Napoleon defeated Bennigsen.

The Peninsular War

The Peninsular War, undoubtedly a beginning of his downfall, can only for a brief period be styled a Napoleonic campaign. In Nov., 1808, he defeated the Spanish insurgents in a decisive action, entered Madrid, Dec. 4, and then turned against Sir John Moore, who had ventured into the heart of Spain with 25,000 men. His retreat began in time to avoid Napoleon's overwhelming force, and the emperor, thinking the matter negligible, left the pursuit to Soult, Jan. 1, 1809, and turned his attention to Austria. Until Waterloo, Napoleon himself never met a British force, and never defeated one in a pitched battle.

The Austrians had been humiliated after Austerlitz, and only awaited an opportunity for revenge. The archduke Charles took the field in April, 1809, and crossing the Inn between Braunau and Passau, got in between the French marshals, and had a great opportunity of crushing either wing, but the necessary rapidity of execution was still lacking in Austrian strategy. Napoleon left Paris, April 13, took over the command on the 17th, and defeated the archduke at Eckmühl on the 22nd. He pushed along the right bank of the Danube to Vienna, and then suffered his first real defeat at Aspern, or Essling, in an attempt to cross the Danube by the island of Lobau. Withdrawing to the island with very heavy loss, he refused to retreat and, calling up every available man, badly defeated the Austrians at Wagram (July 5 and 6, 1809) and forced them to another peace.

Invasion of Russia

From this campaign until 1812 Napoleon did not personally take the field. The Spanish War was left to his marshals, who were not equal to Wellington in generalship. But in 1812 he had decided on the conquest of Russia, and by the middle of June he had assembled on the banks of the Niemen an army of 363,000 men, of whom only one-third were French.

On June 24 he moved on Vilna, but the Russians fell back before him, and the grand army began

its sufferings from heat and cholera. Smolensk was taken with loss on Aug. 16 and 17. Napoleon now hesitated as to postponing his victory till the next year, but his former sound judgements were becoming dimmed by his belief in his own infallibility, so he pushed on, and on Sept. 7 fought the sanguinary battle of the Borodino. It was not decisive, but the Russians left the road to Moscow clear, and Napoleon entered that city on Sept. 14, only to be welcomed by a three days' fire which laid the deserted city in ruins. He began the retreat on Oct. 19 with 115,000 men. Forced by pressure from the S., he was obliged to retreat by his line of advance already denuded of supplies, and his army perished from hunger and cold. The crossing of the Beresina on Nov. 27 and 28 completed the disaster.

The Line of the Elbe

By supreme efforts Napoleon had raised another army by March, 1813, and moved it to the Elbe. The Russians, now joined by the Prussians, had moved into Germany, the combined army being under Wittgenstein. Napoleon assumed command on April 25 at Erfurt, and as usual decided to attack. At Lützen, May 2, Wittgenstein began an attack on the French advanced guard, while he directed the bulk of his forces against Napoleon's right and rear. This turning movement was detected in time by Napoleon, and he was able to repulse the allies.

At Bautzen, May 21 and 22, he again drove back Wittgenstein, but without conspicuous success; and immediately after concluded an armistice which was more to the allied advantage than to his own. In the autumn campaign, he had to face a far stronger combination of Austrians and Swedes, in addition to the now reinforced Russians and Prussians. Undaunted, he would not fall back on France, but, making his headquarters at Dresden, where he defeated Schwarzenberg on Aug. 27, he decided to defend the line of the Elbe, undoubtedly a strategical mistake in the circumstances. His men were not fit to carry out his plans, and his plans were not so clear as they used to be; and in the battle of the nations, Leipzig, Oct. 15 to 18, he was definitely defeated.

Meanwhile, Wellington was bringing pressure from the S. Each conquered nation in turn, as it escaped from Napoleon's grasp, added its quota to his foes, and the campaign in Champagne in 1814 was the despairing effort of the lion at bay. In many

ways it was one of his finest efforts. Schwarzenberg was advancing from Basel, and Blücher on the line of the Moselle, each with an army superior in numbers to Napoleon's; while Bülow and Winzingerode were threatening from the N., Wellington from the Pyrenees, and Murat from Italy. Generally, Blücher's advance on Paris was along the Marne, while Schwarzenberg moved down the Seine, and Napoleon made superb strategical use of these converging rivers.

Leaving his marshals to hold the crossings, he kept his main body between them, and came to the assistance of the side most immediately threatened. Thus he drove back Blücher from Brienne, Jan. 29, defeated him at La Ferté on the Marne, Feb. 11, and again at Vauxchamps, Feb. 14, and so stopped his direct line of advance on Paris, but Winzingerode was now at Soissons. Napoleon turned S. and drove Schwarzenberg, whose advance had reached Mormant, to the left bank of the Seine, Feb. 17, and towards Troyes. Napoleon then moved to meet Blücher on the Marne, and driving him N. as far as Laon, March 10, defeated his left wing at Reims, March 13. Schwarzenberg risked his communications, joined hands with Blücher, and they moved on Paris, which capitulated March 29.

Waterloo

In 1815 Napoleon had again raised a French army to defy Europe. With his usual rapidity, he defeated the unprepared Prussians at Ligny, June 16, but Ney failed to drive Wellington's advanced guard from Quatre Bras, and the obstinate Blücher, instead of retreating E. on Liège, moved N. and joined Wellington on the field of Waterloo.

Bibliography. The Campaign of Waterloo, J. C. Roper, 3rd ed. 1895; Cambridge Modern History, vol. 9, ed. Lord Acton, 1902-10; Napoleon's Campaign in Italy, 1912; and Napoleon's Invasion of Russia, R. G. Burton, 1914.

Napoleonite or **CORSITE**. In mineralogy, a variety of diorite. So called from its occurrence in Corsica, near Ajaccio, it has an orbicular structure which makes it, when cut and polished, a beautiful ornamental stone. From many points radiate concentric rings of dark and light coloured stone, the light consisting of felspar and the dark of hornblende.

Naquet, JOSEPH ALFRED (1834-1916). French politician and writer. Born at Carpentras, Vaucluse, Oct. 6, 1834, he became a doctor, and was professor of chemistry at Palermo, 1863-65. Prosecuted for political writings in 1867, he was a member of the republican govern-

ment's defence commission, 1870-71, and sat as a Radical deputy from 1871, and in the senate for



J. A. Naquet,
French politician

Vaucluse from 1882 onwards. A supporter of Boulanger, 1888, he re-entered the chamber of deputies in 1893, and, after being unsuccessfully prosecuted in connexion with the Panama affair, 1898, retired from public life. In 1900 he joined the Socialist party, and died in Paris, Nov. 12, 1916.

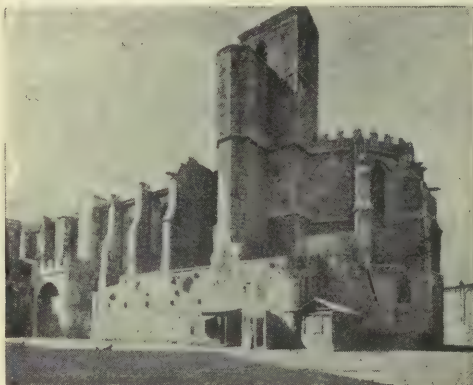
Nara. City of Japan, in Honshu. It is 26 m. E. of Osaka and 26 m. S.E. of Kyoto, and occupies a small part of the site of the ancient city, whose palaces and public and private buildings covered an extensive area now under cultivation. In the 8th century the city was the capital of Japan; it declined for centuries, but since 1868 has made some progress. Several temples, the chief of which is Kasuga-jinsha, are permanent reminders of former greatness. Pop. 33,000. See Japan.

Naramsin. King of Akkad, N. Babylonia. Neo-Babylonian tradition made him son and successor of Sargon I; Nabonidus's record that Naramsin's foundation inscription, unearthed at Sippara about 550 B.C., had been hidden for 3,200 years, would date his reign 3750 B.C. Some scholars consider this to be 1,000 years too early, and inscriptions prove that several other kings succeeded Sargon before Naramsin's reign. His victory stela from Susa is a supreme example of early Mesopotamian art. See Babylonia.

Narasinha or **NARSINGH**. In Hindu mythology, one of the nine incarnations of Vishnu (*q.v.*). He appeared in the form of a man with the head and paws of a lion.

Narayanganj. Town of Bengal, India, in the Dacca dist. It is a rly. terminus S. of Dacca on the Dhaleswari distributary of the Brahmaputra, and is a centre for the traffic in rice and jute. Pop. 27,900.

Narbada or **NERBUDDA**. River of the N. Deccan, India. It rises near Mt. Amarkantak in the Maikal range, the E. end of the Satpura Mts., and flows almost due W. between the Satpuras and the Vindhya Mts. Its mouth is in the Gulf of Cambay, an inlet of the Arabian Sea. It is 800 m. long. Near Jubbulpore, the river winds in a gorge between cliffs of white marble, the celebrated Marble Rocks.



Narbonne, France. Church of the Benedictine Abbey of Lamourguier, dating from the 13th century

Narbonne. City of France. In the dept. of Aude, it is 93 m. E. of Toulouse, and is connected with the



Narbonne arms

Mediterranean by a canal about 5 miles long. In Roman days it was known as Narbo, and was the metropolis of Southern Gaul. In the 12th cent. a commercial rival to Marseilles, it produces a well-known red wine and a famous honey, and has also salt, sulphur, and porcelain works. The Gothic church of S. Just, with a lofty choir, was formerly a cathedral. Pop. 29,000.

Narcissus. In Greek mythology, a beautiful youth, beloved of the nymph Echo, whose passion he could not return. Echo died of grief, and as a punishment the gods caused Narcissus to fall in love with his own reflection in a spring. This fruitless love made him pine away, until he was changed into the flower that bears his name.

Narcissus. Small genus of bulbous herbs of the natural order Amaryllidaceae. They are natives of Europe, N. Africa, N. and W. Asia. One species only, the daffodil (*N. pseudonarcissus*), is indigenous

in Britain, though the jonquil (*N. biflorus*) and the pheasant's-eye (*N. poeticus*), escaped from gardens, have become naturalised here and there. The rush-like or strap-shaped leaves all spring directly from the bulb, and the flowers are borne on tall scapes, either singly, as in the daffodil, or forming an umbel, as in the polyanthus narcissus (*N. tazetta*). As all the species have been widely cultivated, there are a large number of garden variations and many hybrids in existence.

For bedding purposes vast numbers of the bulbs in a resting

state are imported from the bulb-farms of Holland; and great quantities of cut flowers are sent from the Scilly Isles. The bulbs should be planted as early as possible in the autumn, to allow of the full development of roots before winter. They are not particular as

to soil, but will succeed best in a deep loam, especially if a layer of sand is placed beneath each bulb at the time of planting. See Amaryllidaceae; Corona

Narcotics. Drugs which in large doses depress the functions of respiration and circulation, producing unconsciousness. The narcotics most often used in medicine are chloroform, ether, nitrous oxide, opium, and chloral hydrate.

Narcotine. Alkaloid of opium. First prepared by Derosne of Paris, in 1803, it occurs in opium in an amount varying from one to ten p.c., and is obtained as a by-product in the manufacture of morphine. Narcotine, which is not a pronounced narcotic, has been employed in intermittent fever.

Nardò. City of Italy, in the prov. of Lecce, Apulia. Situated 11 m. by rly. W. of Zollino, a junction on the Gallipoli line, it has a cathedral and many churches, also



Narcissus. Narcissus neglecting Echo to gaze upon his own reflection in the water. From the painting by J. W. Waterhouse, R.A., in the Walker Art Gallery, Liverpool

Reproduced by permission of the Corporation of Liverpool

state are imported from the bulb-farms of Holland; and great quantities of cut flowers are sent from the Scilly Isles. The bulbs should be planted as early as possible in the autumn, to allow of the full development of roots before winter. They are not particular as

textile manufactures. In the neighbourhood are olive plantations and vineyards. Pop. 12,000.

Nardoo (*Marsilea drummondii*). Aquatic flowerless herb of the natural order Marsileaceae. It is a native of Australia. One of the water-fern group, it has a creeping rootstock, and its fronds take the form of a long, erect stalk, with four leaflets at the summit, arranged crosswise, and sensitive to light. The spore capsules are of two kinds: one containing a single macrospore, the other numerous microspores. They are contained at first in hard shells known as sporocarps, which the aborigines pound into a kind of flour.

Nareff or **Narev.** River of Poland. One of the big streams that traverse the flat tract of N. Poland, it rises a few miles N.E. of Pruzhany, and after a W. and S.W. course of over 200 m., joins the Bug at Serock, 18 m. N. of Warsaw.



Narcissus. Left, flowers of pheasant's-eye, *N. poeticus*; right, polyanthus narcissus, *N. tazetta*

Nareff, BATTLE OF THE. Fought between the Germans and the Russians, July-Aug., 1915. After the defeat of the Germans at Przasnysz (*q.v.*), Feb. 28, 1915, and their retreat to Mlava and Chorzele, a period of trench warfare followed till about July 12 when Gallwitz, with five German army corps, assumed the offensive to force the crossing of the Nareff.

On July 13 the Germans drove the Russians on from Grudusk, and occupied Przasnysz next day, Ciechanow, after stiff fighting with Russian rearguards, falling into their hands on July 16. Having made a stand at Makoff on July 17, to enable their main local forces to retire, the Russians assembled on the line of the Nareff, on July 18, with Gallwitz opposed to them from near Novo Georgievsk, past Pultusk and Rozan to Ostrolenka. Beyond Ostrolenka, in touch with Gallwitz, Scholtz continued the German front N. to Osovietz. By July 20 the Russians were on the S. side of the Nareff, but still held the bridge-heads on its N. bank, and defended them desperately.

During the night of July 23-24 Gallwitz stormed a passage of the river near its junction with the Orzyo, and though an effort close to Rozan failed, the Germans crossed also above Ostrolenka, some miles S. of Lomza. Higher up Scholtz was repulsed at Novogrod, but Gallwitz pressed on across the river towards the road between Vyszokoff and Ostroff, which was within 20 m. of the Warsaw-Petrograd rly., and not much more than that distance from Warsaw itself. The Russians, however, held their new positions. On July 26 both Gallwitz and Scholtz, strongly reinforced, further attacked the rest of the Nareff line, but made no fresh gains.

On Aug. 7 Gallwitz forced a passage of the Bug, above Novo Georgievsk, and on Aug. 9 Scholtz took Lomza on the Nareff. By Aug. 15 the German advance reached Briansk, on the Nurzetz, a tributary of the Bug, but Warsaw had fallen ten days before. *See* Russia; Warsaw, Attacks on.

Narenta. River of Yugo-Slavia in Herzegovina and Dalmatia; the Slav name is Neretva. It rises near the border of Montenegro, flows N.W., and then S.W. through the largest valley from the Dinaric Alps to the Adriatic Sea past Mostar. The valley provides a comparatively easy route from the Adriatic coast to Sarajevo. A rly. follows the valley to Konjic from Krusevo. Of the total course of 140 m. only 10 m. are navigable.

Nares, SIR GEORGE STRONG (1831-1915). British navigator. Entering the navy in 1845, he



Sir George Nares,
British navigator

served in the *Resolute* during the search for Sir John Franklin, 1852-54. He commanded the *Challenger* during part of her famous cruise, but was recalled to take command of the Arctic expedition, 1875-76, for which service he was made a K.C.B. He was made rear-admiral in 1887, vice-admiral, 1892, and died Jan. 15, 1915. He was the author of several works on seamanship.

Nares, OWEN (b. 1888). British actor. He was born at Maiden Erlegh, Berkshire, Aug. 11, 1888, and was educated at Reading. Having studied for the stage under Rosina Filippi, he made his first professional appearance at the Haymarket Theatre, London, in 1908. His progress was rapid, and among the plays in which he gained distinction as a clever actor in social comedy were *Lady Windermere's Fan*, 1911, *Milestones*, 1912, *David Copperfield*, 1914, and *Peter Ibbetson*, 1915.

Nariño. Maritime dept. of S. Colombia, S. America. It is bounded N. by Cauca and S. by Ecuador. Although traversed by the Andes, there are many fertile tracts, yielding sugar, cocoa, rice, potatoes, and cereals. Stock-raising is a prominent industry, and gold-mining is engaged in. Manufactures include Panama hats and foot-wear. Over 500 m. of rly. serve the dept., which has many good roads. The capital is Pasto (*q.v.*). Its area is 9,360 sq. m. Pop. 292,500.

Nariño, ANTONIO (1765-1823). Colombian statesman. He was born at Santa Fé, and as a young man incurred the displeasure of the authorities by translating into Spanish the decree of the French assembly concerning the rights of man and of citizenship, issued when framing his country's constitution. After spending some time in Europe, he returned to Colombia in time to take part in the rising against Spain, and for a short time in 1811 and again in 1812 was president and dictator. In an ensuing civil war he was defeated and sent in 1814 to Spain, where he remained in prison until 1820. He died at Leiva, Dec. 13, 1823.

Narni. City of Italy, in the prov. of Perugia. It stands on the Nera, the ancient Nar, 66 m. by rly. N. of

Rome. Picturesquely situated on a rocky eminence, 1,000 ft. alt., with an ancient castle, now used as a prison, it has a cathedral dating from the 11th century. There are mineral springs in the vicinity. A trade is carried on in chemicals and indiarubber goods. Roman remains include a remark-



Narni, Italy. Piazza Priora, with the 11th century cathedral on the left; right, façade of the 14th century town hall

able bridge built by Augustus, and an aqueduct that brought water from a spring 15 m. distant. The ancient Nequinum or Narnia, it has been a bishop's see from 369. Pop. 5,000.

Naroch OR NAROTCH. Lake of W. Russia. It is 80 m. S.S.E. of Dvinsk and is drained by the river Naroch, which joins the Viliya in Lithuania.

Naroch, BATTLE OF LAKE. Fought between the Russians and Germans, March and April, 1916.

In the middle of March, 1916, the Russians started an offensive between Lake Naroch and Lake Vishnieff, which with intermissions lasted till the middle of April.

The centre of the struggle was the belt of land between the lakes, which the enemy had fortified with extensive works. The Russians attacked these positions first on March 16 and 17, with artillery fire, and next day repulsed a German assault; their own infantry attack, delivered on March 18, had a measure of success, and on March 19-20 they carried the village of Zanapthe, and occupied some German trenches.

S. of Drisviaty the Germans, on March 24, recovered part of the lost trenches; near Smorgon the battle blazed up furiously. On a front of about 70 m. the struggle went on night and day, most of the Russian

assaults being made in the darkness. In the Naroch-Vishnieff sector they had gone forward by March 23 to the villages of Blizniki and Mokrytsa, within the enemy lines, but after six more determined attacks, in March and the first two weeks of April, their advance was only about a mile from its starting point. From April 15-27 there was a lull, and then the Germans opened an offensive. They brought up large quantities of artillery, and on April 28 began an intense bombardment, to which the Russians could make no effective reply. The German infantry broke through the Russian front, and moving forward for a mile and a half, gravely threatened the entire force. The situation, however, was changed when two reserve regiments charged the German flank and drove it in, forcing an immediate retirement along the whole line. The Germans came on again and regained part of the ground. *See Russia.*

Narrabri. Town of New South Wales. It is 353 miles by rly. N.W. of Sydney, and stands in a pastoral and wheat district. Pop. 4,700.

Narragansett Bay. Inlet on the S.E. coast of Rhode Island, U.S.A. It extends inland to the mouth of Providence river, a distance of 25 m., and is from 4 m. to 8 m. broad. It contains several islands, among them Conanicut, which forms the lower portion into two channels, Prudence Island, and Rhode Island, which separates it from Sakonnet river. Providence stands at its head, Newport on its E. shores, and Narragansett Pier, a fashionable seaside resort, below its entrance on the opposite side to Newport.

Narrows, THE. Name given to the narrowest portion of the Dardanelles Strait. It is less than a mile wide between Kilid Bahr and Chanak. *See Dardanelles, Attacks on the.*

Narses (c. 474-568). General and administrator under the Roman emperor Justinian. A Persarmenian eunuch, he rose to high position at court, and for some time shared the command in Italy with Belisarius. His own military triumphs included a series of victories over the Goths, Alamanni, and Franks, as a result of which Italy was recovered as a province of the empire, governed by Narses himself from Ravenna. His administration, however, was harsh, and in consequence of a deputation sent to Justinian to complain, Narses was recalled. In revenge he intrigued with the Lombards. He died in Rome. *See Byzantine Empire.*

Narsingharh. Native state and town in the Bhopal Agency, Central India. The state occupies part of the N. slopes of the Vindhya Mts. Its area is 623 sq. m. The town lies W. of the Parbati river, 20 m. N.W. of Bhopal.

Narsinghpur. Native state in Bihar and Orissa, India. The state is situated N. of the Ma-



Narva, Russia. View of the town from Ivangorod fortress; the lofty tower is that of the Protestant Church, to the left of which is the cathedral

hanadi and S. of the eastern detached portion of Angul; it is one of the Orissa feudatory states. The raja resides at the village of Narsinghpur. Area, 199 sq. m. Pop. state, 40,000.

Narthex. In early Christian architecture, the vestibule or porch of a basilica. It is within the main entrance at the opposite end to the altar and sanctuary. It was originally used to accommodate Christian converts who had not passed the stage of initiation. The term has been extended to all church vestibules, but the traditional type of narthex is a room as long as the width of nave and aisles combined, with doors leading into the latter and others to the atrium or outer court. *See Basilica; Cathedral.*

Narva. Town of N.W. Russia. It is in the government of Petrograd, 75 m. from that city, and stands on the Narva, 7 m. from its mouth in the gulf of Finland. It is connected with Petrograd by rly. The buildings include the cathedral, the town hall, and the arsenal. The industries are tanning, flax, cloth and cotton mills, and the making of rope. The fishing is important. Founded in the 13th century, Narva was the property of Denmark and the Teutonic Order before passing to Sweden. The Swedes improved its fortifications, and in 1700 it was besieged, in

vain, by the Russians. In 1704, however, Peter the Great captured it, and henceforward it was part of Russia. The Russians erected a fortress called Ivangorod, on the other side of the river, but it fell into disuse. Pop. 17,000.

The battle of Narva was fought between the Russians and the Swedes, Nov. 30, 1700. The Russians were besieging the fortress, then in the possession of the Swedes, when Charles XII advanced to its relief. Peter the Great himself did not await his formidable foe, but fled to Novgorod. The Swedes, 8,000 strong, attacked the Russians behind their entrenchments, in a

snowstorm, and in an hour had broken their left wing, and driven their cavalry in flight. Charles gained a decisive victory.

Narvik. Seaport of Norway. It stands on the Ofoten Fiord, a branch of the West Fiord. The terminus of the rly. to Gellivara (q.v.) and Lulea (q.v.) in Sweden, and situated 30 m. N.N.E. of Peritz, it has extensive quays and exports Swedish iron ore. Pop. 4,600.

Narwhal (*Monodon monoceros*). Cetacean belonging to the porpoise group. It inhabits the Arctic Ocean, and is distinguished by the spirally grooved, tapering tusk of the male, often over 7 ft. long, the animal itself being from 12 ft. to 15 ft. in length. The tusk usually grows from the left upper jaw, and its fellow on the other side is rudimentary and does not protrude from the jaw, though specimens have been found with two long tusks. In other respects the narwhal has the general form of a small whale. Found in small schools of from 10 to 20 individuals, it is believed to feed upon cuttles, crustaceans, and small fish. Its oil and the fine ivory obtained from the tusk are valuable. *See Whale.*



Narwhal, Male specimen of the Arctic cetacean, showing the long, tapering tusk

Nasal Index. Number indicating the ratio of the breadth to the length of the human nose. The breadth-number, measured across the anterior orifice, is multiplied by 100, and divided by the length-number, measured from the root between the eye-sockets to the angle formed by the septum and the lip. Medium noses range from 53 to 47 with the American Indians; broad above 53, as in most Mongols and all negroids; and narrow below 47, among the Europeans and Eskimos. *See* Anthropology; Anthropometry; Cephalic Index; Craniometry; Man.

Nascent State (Lat. *nasci*, to be born). Expression used of chemical action which takes place while the atoms of a molecule are in the free state. In this condition elements exhibit a greater activity than usual. For instance, hydrogen may be passed through an arsenical solution without any chemical change taking place, but if the hydrogen is generated in the solution arseniuretted hydrogen is formed and given off as a gas.

Again, no effect is produced if hydrogen is introduced into a solution of ferric chloride, but the iron salt is reduced to the ferrous state by hydrogen in the nascent state, i.e. generated in the solution itself. The usual explanation of this difference is that the atoms of hydrogen which result from the disruption of the molecule are more active. Another hypothesis is that the nascent hydrogen ions are more active at the moment when they are giving up their electric charges. *See* Chemistry; Hydrogen; Solution.

Naseby, BATTLE OF. Fought June 14, 1645, during the English Civil War. The king's cause was losing ground, and his army of 7,500 men was being followed by 13,000 parliamentarians under Fairfax and Cromwell from Daventry towards Leicester. At Broadmoor, just before entering Leicestershire, Charles decided to fight. His foes fell back and took up a position on some high ground just N. of Naseby, a village 7 m. from Market Harborough. Both armies were drawn up in similar formation, the foot in the centre, with cavalry on both flanks and a reserve behind.

The royalists opened the fight by crossing the intervening valley and charging up the hill. On one wing, with Rupert leading, they put to flight the opposing horsemen, whom they recklessly pursued towards Naseby. While the royalist infantry pushed the enemy back, the day was turned by Cromwell's troopers, who, after routing the horse opposed to them,

fell upon the flank of the infantry. These were thrown into confusion, and the king, who was with the reserve, gave them the word to charge. But the earl of Carnwath, realizing the situation, seized the bridle of his horse and turned it from the field, the attendant troops quickly following this example. The parliamentary foot rallied, and, with Cromwell's horse, soon completed the victory. Rupert, returning from his pursuit, could do naught but follow Charles to Leicester. The royalists lost about 1,000 killed and 5,000 prisoners, the king's private papers being seized and afterwards published. *See* Charles I; Civil War, The.

Nash, PAUL (b. 1889). British artist. Born in Kensington, May 11, 1889, he was educated at S.



Paul Nash,
British artist
Bassano

Paul's School, and became a pupil at the Slade school of art. At first a figure artist, he turned chiefly to landscapes. In the Great War he served in the Artists' Rifles, in the Hampshire Regiment, and as an official artist in France. In this capacity he became known by his vivid paintings and drawings of the front areas. His brother, John Nash, won recognition for his landscape painting, woodcuts, etc.



Paul Nash. Night in the Ypres Salient, an impressionist picture of a fire-trench, with a party in No-man's Land working in the glare of star-shells

By permission of the artist

Nash, RICHARD (1674-1762). English dandy known as Beau Nash. Born at Swansea, Oct. 18, 1674, the son of a successful glass-

maker, he was educated at Carmarthen Grammar School and Jesus College, Oxford. He was for a brief time in the army, and then entered the Inner Temple, 1693. He, however, took to gambling and living by his wits. In 1705 he went to Bath, then beginning



Richard Nash,
18th century dandy

to be a fashionable resort, and soon set about organizing its social attractions. He succeeded greatly, and came to be regarded as the arbiter of affairs and titular master of the ceremonies. He died Feb. 3, 1762, and was buried in Bath Abbey. *See* Life of Richard Nash, O. Goldsmith, 1762; Bath under Beau Nash, L. Melville, 1907; The Beaux and the Dandies, C. Jerrold, 1910.

Nashe OR NASH, THOMAS (1567-1601). English satirist and critic. Born at Lowestoft, he was educated at S. John's College, Cambridge, graduating in 1586. After travel in France and Italy, he became a prominent figure in literary London, a friend of Greene, Lodge, Marlowe, and others. He took the anti-Puritan side in the Martin Marprelate controversy, engaged in a paper war with Gabriel Harvey (*see* his *Have with you to Safron Walden*, 1596), completed Mar-

lowe's *Tragedy of Dido*, 1594, and was imprisoned in the Fleet on account of his suppressed comedy, *The Isle of Dogs*, 1597. His

novelette, *The Unfortunate Traveller*, or *The Life of Jacke Wilton*, 1594, started the Surrey and Geraldine legend, and forms a link between the picaresque fiction of Spain and the novels of Defoe and Smollett. His works have been edited by R. B. McKerrow. 4 vols., 1904-10.

Nashua. City of New Hampshire, U.S.A., the co. seat of Hillsboro co. It stands on the Nashua river, near its confluence with the Merrimac, 40 m. N.W. of Boston, and is served by the Boston and Maine Rly. It contains a U.S. fish hatchery, and has several manufactures, and an extensive trade in agricultural produce is carried on. Settled in 1655 and incorporated as Dunstable in 1673, it received its present name in 1836 and became a city in 1853. Pop. 28,400.

Nashville. Second largest city of Tennessee, U.S.A., the state capital and the co. seat of Davidson co. It stands on the Cumberland river, 185 m. S. by W. of Louisville, and is served by the Louisville and Nashville and other rlys., and by steamers. A well-built city, its prominent buildings include the capitol, the Federal building, the city hall, and the court house. An important educational centre,

Nashville, BATTLE OF. Federal victory in the American Civil War, Dec. 15-16, 1864. J. B. Hood, in command of the army of Tennessee, 25,000 strong, was moving W. from Atlanta when he learned that a Federal army of some 55,000, under G. H. Thomas, was holding Nashville. Hood invested the town until, Dec. 15, Thomas opened the battle by a general attack. The day was slightly in favour of the Confederates, who re-formed their line of battle when night fell. An attack on the Confederate right in the morning failed, but MacArthur,



Nasik, Bombay. Ghat on the river Godavari where Hindu pilgrims perform their ritual bathing

stream. Nasik is a great road centre on the rly. from Bombay to Delhi. It is famous for its brass and copper work, and cotton handloom weaving. Area, 5,879 sq. m. Pop., dist., 905,000; town, 33,500.

Nasirabad OR MAIMENSINGH. Town of Bengal, India. Situated on the right bank of the old channel of the Brahmaputra, it is an important centre for rice and jute traffic on the river. It has rly. connexions with Dacca and Chittagong. Pop. 19,900.

Nasirabad. Town of Bombay prov., India, in the dist. of Kandesh East. Situated on the rly. 2 m. S. of Bhadli, it manufactures Mahomedan glass bangles. Pop. 13,000.

Nasmyth, ALEXANDER (1758-1840). Scottish painter. Born at Edinburgh, Sept. 9, 1758, he studied under Allan Ramsay in London, and in Italy. Settling at Edinburgh, he tried portrait painting, but abandoned it for landscape. He was a member of the Society of Scottish Artists, an associate of the Royal Institution, and occasionally exhibited at the R.A., London. He died April 10, 1840. See Burns, R.

Nasmyth, JAMES (1808-90). British engineer. Born at Edinburgh, Aug. 19, 1808, he was educated at the High School, and soon became an adept in making models of steam and other engines. In 1834 he opened a foundry in Manchester, and, in partnership with



Nashville, Tennessee. State capitol, built on a hill overlooking the town. Top, right, the Parthenon, a copy of the Greek temple, in Centennial Park

it is the seat of the Vanderbilt, Walden, Fisk, and Roger Williams universities, etc. The city contains the state library and the Watkins Institute, in which are the State Historical Society's collections.

Nashville is a flourishing industrial city. Settled in 1780 and formerly known as Nashborough, it was incorporated under its present name in 1784, and became a city in 1806. In 1864 it was the scene of a fierce battle between the Tennessee army and the Federal forces. About 10 m. E. of Nashville is the Hermitage, the home of Andrew Jackson. Pop. 118,300.

federates lost 4,500 in prisoners, in addition to heavy casualties.

Nasik. District and town of Bombay province, India, in the Central division. The dist. lies N.E. from Bombay, E. of the W. Ghats. The rainfall is 29 ins. annually; two-thirds of the area is cultivable, but only 54 p.c. is cultivated. Native food grains and pulses are the chief crops.

The town is near the source of the Godavari river at the foot of the W. Ghats, and is consequently a sacred place of pilgrimage; temples and shrines line the river banks and dot the bed of the

commanding the 16th Federal corps, pierced the Confederate left at the moment when Federal cavalry attacked them in the rear. The rout was complete, and Hood made his way across the Tennessee river with what was left of his army. Federal losses were 3,000; the Con-

federates lost 4,500 in prisoners, in addition to heavy casualties.

Nasik. District and town of Bombay province, India, in the Central division. The dist. lies N.E. from Bombay, E. of the W. Ghats. The rainfall is 29 ins. annually; two-thirds of the area is cultivable, but only 54 p.c. is cultivated. Native food grains and pulses are the chief crops.

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Alexander Nasmyth, Scottish painter
After Nicholson

H. Gaskell, worked up a prosperous business. In 1842 he patented the steam hammer by which



James Nasmyth,
British engineer

his name is best known. His claim to this was disputed, as the French manufacturer Schneider had copied the design from Nasmyth's notebook and

built one at his Creusot works before Nasmyth erected his in England. He invented various tools and mechanical appliances, and constructed a telescope to assist his astronomical studies. His observations were recorded in *The Moon considered as a Planet, a World, and a Satellite*, 1874, illustrated with photographs. He died May 7, 1890.

Nasmyth, Patrick, or Peter (1787-1831). British painter.

Born at Edinburgh, a son of Alexander Nasmyth, he was mainly self-taught. An early accident compelled him to use his left hand in painting. In 1807 he settled in London, where, on account of his imitation of the Dutch school, he was acclaimed as the English Hobbema. He exhibited at the R.A. from 1809, and was an original member of the Society of British Artists. He died in Lambeth, Aug. 17, 1831.



Patrick Nasmyth,
British painter

Nasr-ed-Din (1831-96). Shah of Persia. Son of Mahomed Mirza, he was born July 17, 1831, and succeeded to the throne, 1848.



Nasr-ed-Din,
Shah of Persia

Settling all internal unrest with an iron hand, he placed his throne in friendly relations with France and Russia; but his attempt to annex Herat (*q.v.*) brought him into conflict with Britain, 1856-57. A man of enlightenment and culture, his visits to Europe, 1873, 1878, and 1889, strengthened his endeavours to introduce reforms into Persia. Religious toleration, the telegraph, banking organization, and a post office were established, despite opposition. He was assassinated by a religious fanatic, May 1, 1896.

Nasrieh or **NASIRIYEH**. Town of Mesopotamia. It stands on the Lower Euphrates, at the S. extremity of the Shat-el-Hai (*q.v.*), about 100 m. N.W. of Basra. It is of recent origin, supplanting Samawa, which had been the chief place in that region. During the Turkish régime before the Great War it was the headquarters of the civil administration of a large district. It is well built, with wide streets, is the centre of a rich agricultural region, and has a large trade. It was occupied by the British on July 25, 1915.

Nasrieh, BATTLE OF. Fought between the British and the Turks, July 24-25, 1915. On June 3, 1915, the British had taken Amara and dispersed the Turks coming from Ahwaz. There then remained the enemy force which held Nasrieh, and Sir John Nixon decided to attack it and occupy the town. The country between Nasrieh and Kurna was inundated, and naval officers and men on light-draught vessels formed a considerable part of the force, under General Gorringe, which Nixon concentrated at Kurna for the effort towards the end of June. The Turks had sown the waters with mines, and the heat was terrific, but in the second week of July Gorringe, after some sharp fighting, found the enemy strongly entrenched 5 m. to the S. in a formidable position, its front on both banks of the river being protected by deep channels, and its flanks resting on marshes.

After an unsuccessful attempt to turn it on his left, Gorringe passed several days in making final preparations for the decisive assault, delivered on July 24. The Turks, after a stubborn resistance, were driven from trench after trench by the British, including English and Indian troops. The naval flotilla co-operated, and the engagement closed in the defeat of the enemy, who abandoned Nasrieh, which was occupied on July 25. The British casualties were under 600. The Turks left 500 dead, and lost 1,000 prisoners, besides 17 guns. See Mesopotamia, Conquest of.

Nassarawa. Prov. of N. Nigeria. It lies along the N. bank of the Benue river, and has an area of 17,900 sq. m. A mountainous region, it has extensive forests and contains many fertile river valleys. Its chief centres are Nassarawa, 90 m. N.E. of Lokoja, Keffi, Lafia, Jemaa, and Abuja. Rubber and cotton are among its products. The country was occupied at different times by independent or semi-independent tribes until, in 1840, much of it was conquered by the Fula. Soon the British had

interests therein, and in 1900 the Fula began to attack them, a British resident, Captain Maloney, being murdered at Keffi in 1902. The result was the conquest of the country and the submission of the Fula to the British. Pop. 160,000. See Nigeria.

Nassau. District of Germany, now part of the Prussian prov. of Hesse-Nassau. From it the family of Orange-Nassau took the title of count and duke. It was an independent state until 1866. Nassau lies between the Main and the Rhine, with the Lahn flowing through it. Its area is about 1,800 sq. m., and it had in 1866 nearly 500,000 inhabitants. It takes its name from the little town of Nassau on the Lahn, where the ruling family built their castle, but Wiesbaden was the capital.

The family of Nassau dates from about 1200. To a younger branch belonged William the Silent, and other princes of the house of Orange-Nassau. This became extinct when William III died in 1702, and its lands passed to a branch still in Nassau. This lost all its lands in 1806, but in 1815 its head, William, was made king of the Netherlands and grand duke of Luxemburg. His family, extinct in the male line in 1890, was represented in the female line by Wilhelmina, queen of the Netherlands.

The other branch of the family, having produced a German king in Adolph of Nassau (d. 1298), was divided into several lines. Two of these were made princes of the empire, and in 1806 Napoleon made them dukes. In 1816, having been granted the lands taken from the other branch of the family in 1806, Frederick William, as the result of a succession of deaths, became the sole ruler of Nassau. He called himself duke of Nassau, joined the German Confederation, and gave a constitution to his people. In 1866 the duke joined Austria in fighting against Prussia; consequently he lost his duchy. In 1890 the head of this family became grand duke of Luxemburg. See Netherlands; Orange.

Nassau. City, seaport, and chief town of New Providence (*q.v.*), and capital of the Bahama Islands, B.W.I. It stands on a declivity of the N.E. coast, has a sheltered harbour, wherein vessels drawing 16 ft. of water may anchor, and is defended by forts. Prominent buildings include government house, a cathedral and other churches. It is a winter resort for invalids. It exports much local produce, including sponges, cotton, fruits, and salt. Founded by the English in 1629, it was

almost destroyed by the Spaniards and French in 1703, but rebuilt in 1718, and fortified in 1740. In the American Civil War it was the headquarters of the blockade runners. It is in regular steam communication with New York. A wireless telegraphy station has been installed. Pop. 11,000.

Nast, THOMAS (1840 - 1902). American caricaturist. Born at Landau, Bavaria, Sept. 27, 1840,



Thomas Nast, American caricaturist

he was taken in 1846 to America, where he received a few months' tuition from Theodor Kaufmann. After drawing for Harper's Weekly and other journals, he went through the Garibaldi campaign in Italy, 1860-62, and the American Civil War. As a caricaturist, he proved a subtle and dangerous opponent of Tammany Hall. The Fight at Dame Europa's School, 1871, and the New York edition of Pickwick, 1873, were illustrated by him. He became American consul at Guayaquil in Ecuador, where he died, Dec. 7, 1902. See Thomas Nast: his Period and his Pictures, A. B. Paine, 1904.

Nasturtium. Genus of hardy cruciferous plants. See Indian Cress; Tropaeolum; Watercress.

Natal. British armoured cruiser. She was destroyed by an internal explosion in the Cromarty Firth, Dec. 30, 1915. Originally planned to be of the Duke of Edinburgh (q.v.) class, she was altered during construction, 1904-5, and was of the same class as the Achilles, Cochrane, and Warrior, displacing 13,550 tons, with 16,000 h.p., giving a speed of 23 knots. She carried six 9.2 and four 7.5 guns. The Warrior was lost at Jutland.

Natal. One of the four provinces of the Union of South Africa. It has an area of 35,291 sq. m., and a population of 1,194,000, of whom, according to the census of 1921, 137,500 are whites. The great majority of the whites are of British extraction, but there are a number of Dutch, and a colony of German settlers. Of the various denominations the Anglican Church has the most adherents, but the Dutch Reformed Church, Presbyterians, and Wesleyans are also strong. There is a large colony of



Nassau, New Providence. Courtyard of Government buildings in the capital of the Bahama Islands

Asiatics, chiefly Indian coolies, but the bulk of the people are Kaffirs and allied races. Natal consists of Natal proper and Zululand. The latter, which has an area of 10,424 sq. m., in its turn includes Tongaland; also the districts of Vryheid, Utrecht, and part of Wakkerstroom, which are included in the so-called northern districts, having been in 1903 transferred from the Transvaal to Natal. Pietermaritzburg is the capital, but Durban is the largest town. Ladysmith comes next in size. Other places are Dundee, Newcastle, Vryheid, and Greytown.

Natal lies in the extreme S.E. of Africa, and is bounded by the Cape Province and Basutoland on the S.W. and W.; by the Transvaal and Portuguese territory on the N.E. and N.; by the Orange Free State on the N.W., and by the Indian Ocean on the S.E. It has a seaboard of about 375 m., almost wholly without indentation. Of this, 165 m. belongs to Natal proper, and the rest to Zululand. Its greatest length is about 250 m., and its greatest breadth about 200.

The province generally is mountainous, and near its border are some of the highest peaks of the Drakensberg range. The ground rises rapidly from the coast in a succession of hills and ridges, between which are valleys in which the climate is tropical. The temperature falls as the higher parts of the country are reached, but

everywhere it is warm. Malaria is found on the coast, but the province is practically free from consumption.

The highest mountains in Natal are Mont aux Sources (11,000 ft.), and other peaks of the Drakensberg range, many over

10,000 ft. high. The Biggarsberg is a spur of the Drakensberg. The chief river is the Tugela, which flows across the province from its source in the Drakensberg. Its main tributary is the Buffalo, which comes from another section of the Drakensberg, others being the Klip and the Mooi. Other rivers are the Umkomanzi, or gatherer of waters, a stream that, owing to its winding course, is 200 m. long, Umzimkulu with its tributary, the Ingangwana, and the Umgeni with its wonderful falls. The Pongola is a frontier river, which divides Natal from the Transvaal.

Natal and the Union

Natal is governed, as far as its internal affairs go, by a representative assembly and a small ministry responsible to it, on the accepted British model, except that its head, the administrator, is appointed by the Union Government. This ministry looks after education, hospitals, etc., but most other matters are controlled by the Union authorities. It has a revenue from certain specified sources, and subsidies granted by the Union Parliament. The franchise is practically confined to whites. In the House of Assembly of the Union the province is represented by 17 members, while it sends eight to the Senate. The law is administered by magistrates in local courts and by judges on circuit. The highest court of the province

sits at Pietermaritzburg, and from it there is a right of appeal to the supreme court of the Union at Bloemfontein.

The soil of the province is not very fertile and only about 12,000,000 acres are available for agricultural purposes. Coal is the most important mineral. Iron exists



Natal arms



H.M.S. Natal. British armoured cruiser, sunk by explosion in the Cromarty Firth, Dec. 30, 1915

Cribb, Southsea

in large quantities, and in close proximity to the coal, while gold and other minerals are found. There are marble quarries near the mouth of the Umzinkulu. In Zululand gold reefs have been discovered, and there other minerals, including coal, exist. Timber is abundant, much being cut for industrial purposes, and various kinds of tropical fruits abound in the warm regions near the coast, where also tea, sugar, coffee, and cotton are grown.

Many of the settlers devote their energies to the rearing of horses and cattle, although the rinderpest has proved a great drawback in this connexion. There are a large number of sheep and goats, many of these being owned by the natives, while ostriches, pigs, and poultry are bred. Of wild animals the larger ones, elephant, buffalo, and giraffe, have disappeared, and the lion and rhinoceros are only found in one area. Antelopes are still fairly plentiful, and there are some leopards and panthers. Birds and snakes abound.

The entrance to the province is at Durban, where steamers of the Union-Castle and other lines call regularly. From there the main line of rly. strikes across the country, passing by Pietermaritzburg, Ladysmith, and Newcastle, and after cutting the Drakensberg, enters the Transvaal. Two lines branch off from Durban along the coast, one to the N. and the other to the S., while two others go from Pietermaritzburg.

Discovery by Vasco da Gama

The country was discovered by Vasco da Gama on Christmas Day, 1497, and was therefore named Natal or Terra Natalis. Various mariners, both English and Dutch, put in here during the next three centuries, but the few attempts to make settlements were not successful. The native tribes were left almost to themselves until 1835, when one of the kings made a grant of land to the British and a colony was formed at Durban. The authorities in London, however, declined to proclaim the district a British colony.

In 1837 the first Boer settlers, coming through the Drakensberg, entered Natal. Almost at once they were attacked by the Zulus, and a struggle, in which some Britishers took the side of the Boers, began. Finally, in Dec., 1837, after the British had been obliged to evacuate Durban, a large Zulu force was destroyed on the Umslatos river, and the Boers secured possession of the country, entering Durban and founding Pietermaritzburg. They declared themselves



Natal. Map of the South African province, with an area of 35,291 sq. m.

a republic, but soon trouble arose with the British, who refused to admit their request for independence. There was some fighting, but in the end (1843) the official Boers accepted the British proposals and Natal became a British colony. Many, disliking this submission, returned to the Transvaal.

In 1844 the country was added to the Cape of Good Hope, but in 1856 it was made a separate colony. In 1879 the Zulu war was fought out in the colony, and in 1900-2 some hard fighting took place on its borders. In 1893 it was granted responsible government, and in 1910 it joined the new union of South Africa. See S. Africa; Zululand.

Bibliography. Natalia: Exploration and Colonisation of Natal and Zululand, J. F. Ingram, 1897; Natal, the Land and its Story, R. Russell, 6th ed. 1900; A Lifetime in S. Africa, Sir J. Robinson, 1900; Natal Province, Official Handbook, A. H. Tatlow, pub. annually, London and Durban.

Natal. Seaport of Brazil, and capital of the state of Rio Grande do Norte. Situated on the Rio Grande near its mouth, 138 m. N. of Pernambuco, with which it is

connected by rly., its harbour, formed by the estuary, is occasionally obstructed by sandbanks, which are dredged to admit vessels of 22 ft. draught. Cotton, sugar, leather, rubber, wax, and timber are exported. It was formerly known as Cidade dos Reis. Pop. 20,000.

Natalie (b. 1859). Queen of Serbia. Born at Florence, May 14, 1859, daughter of a Russian colonel, Kechko, and of Princess Pulcheria Sturdza, a Rumanian lady, she married on Oct. 17, 1875, King Milan (q.v.) of Serbia. Separated from her husband in 1888, she retired to Wiesbaden with her son Alexander. Milan secured the abduction of the boy, and obtained a decree of divorce. After the murder of Alexander and Draga in 1903, Natalie lived in retirement. See A King's Romance: the Story of Milan and Natalie, Frances A. Gerard, 1903.



Natalie, Queen of Serbia

Natchez. North American Indian tribe of Moskogan stock. In the 17th century they occupied nine villages in Mississippi. Their complex sun-worship, head-flattening, use of mounds as foundations of dwellings and temples, advanced pottery, and skilful weaving of mulberry-bark cloth perpetuated the culture of the mound-builders.

Early in the 18th century the Natchez and their allies entered upon a war with the French settlers, who had built a fort on their soil. In 1729 this fort was destroyed by the Indians, who killed the men and took the women and children prisoners. In return the French drove the tribe across the Mississippi into Louisiana and partly destroyed them in Jan., 1731. The prisoners were sold as slaves to the W. Indian planters, and the remnant, after further fighting, joined other tribes. The few existing Natchez are found chiefly with the Cherokees. The name is perpetuated, not only in the city, but in Natchez Trace, a road constructed in 1801-2 from Nashville across the state of Mississippi to Natchez, about 500 m. away. Its course is now marked by granite boulders. See American Indians; Cherokee.

Natchez. City and seaport of Mississippi, U.S.A., the co. seat of Adams co. On the Mississippi river, 99 m. S.W. of Jackson, it is served by the Mississippi Central and other rlys. The buildings include the court house, churches, libraries, etc. There is a memorial park, and near the city a national cemetery and an observatory. The industries are mainly connected with cotton, which is shipped from here in large quantities. Steamers go also up the Mississippi. Natchez occupies the site of a fort, built by the French, which passed to Britain in 1763. In 1779 the Spaniards secured it, and it was included in the U.S.A. in 1798. It was made a city in 1803. Pop. 11,800.

Nathanael. Disciple of Jesus Christ. Practically nothing is known of him save that he came from Cana of Galilee (John xxi, 2), and was brought to the Master by Philip (John i, 45). Some scholars think he is identical with Bartholomew. The name, also spelled Nathaniel, means in Hebrew the gift of God.

Nathubhoy, SIR MANGALDAS (1832-90). Indian philanthropist. Born Oct. 15, 1832, he inherited a large fortune as a child, increasing it when he grew up by his talent for commerce. A man of advanced opinions, he founded seven scholarships in Bombay University to enable students to study in Europe.

Member of the legislative council, 1866-74, he was knighted in 1875. He gave over half a million to charity, and died at Bombay, March 9, 1890.

Natick. Town of Massachusetts, U.S.A. In Middlesex co., it is 17 m. from Boston on the Charles river. It has a station on the Boston and Albany Rly. The buildings include public library, hospital, churches, and schools, and the manufactures are boots and shoes, clothing, etc. Near is Cochituate Lake, from which Boston obtains some of its water. Natick was founded about 1650 by John Eliot, as a settlement for converted Indians, who formed for many years the majority of its inhabitants. It was made a municipality in 1781. Pop. 10,000.

Nation, THE. Social, political, and literary weekly review, published in London. It was founded March 2, 1907, under the editorship of H. W. Massingham (*q.v.*), to continue the Radical tradition of The Speaker, which dated from 1890. In Feb., 1921, it took over The Athenaeum, the title being altered to The Nation and The Athenaeum. The title of The Nation was given to the organ of the Young Ireland party which Sir Charles Gavan Duffy (*q.v.*) helped to found in 1842, and to an influential weekly review founded in New York by E. L. Godkin (*q.v.*), 1865.

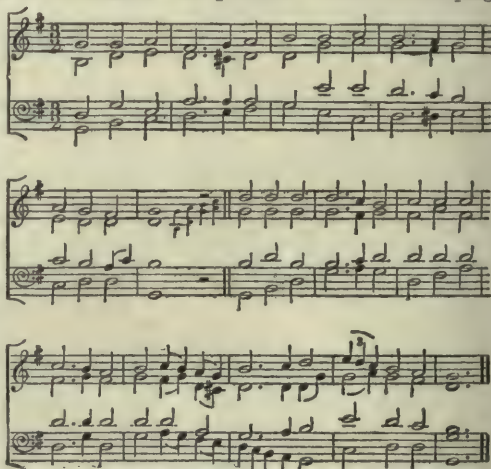
National. Belonging to the nation. It is given as a prefix to an endless number of movements and societies, but in this Encyclopedia these are placed under their distinctive names, *e.g.* rifle, Sunday, etc. In one or two cases, however, *e.g.* National Gallery, the word national is the dominating word, and so such entries are put under National.

National Anthem. Musical composition with words, officially adopted for ceremonial use as an expression of patriotism and loyalty to a national cause. Differing essentially from national songs, national anthems are a comparatively modern innovation. Britain has the earliest

and the best in God Save the King (*q.v.*), appropriated by Prussia as the melody for Heil dir im Siegerkranz and also by Denmark for her revised version of God Save the King, 1902. In La Marseillaise (*q.v.*) France has an outstanding example, and Haydn's Hymn to the Emperor, 1796, and Ivor's God Save the Tsar, 1833, gave to the Austrian and Russian empires respectively national anthems worthy of their dignity. The U.S.A. have no accepted national anthem, but during the Great War The Star-Spangled Banner was generally used as an equivalent. La Brabançonne (*q.v.*) lacks the dignity proper to an anthem worthy of the Belgian nation.

National Assembly. Name given to the governing body of the Church of England. It was set up under the Enabling Act of 1919 to take the place of convocation, but with somewhat wider powers than the older body. The assembly consists of three houses. The house of bishops consists of the two archbishops and all the diocesan bishops; the house of clergy contains representatives of the clergy, elected in the same manner as those of the lower house of convocation; the house of laity consists of representatives of the laity of the two provinces, Canterbury and York.

The assembly has power to legislate for the Church of England, but provision is made for keeping



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| | |
|-----------------------------|---------------------------------|
| God save our gracious King, | Confound their politics; |
| Long live our noble King! | Frustrate their knavish tricks; |
| God save the King! | On Thee our hopes we fix; |
| Send him victorious, | God save us all! |
| Happy and glorious, | |
| Long to reign over us, | Thy choicest gifts in store |
| God save the King! | On him be pleased to pour; |
| | Long may he reign! |
| O Lord our God, arise, | May he defend our laws; |
| Scatter his enemies, | And ever give us cause |
| And make them fall: | To sing with heart and voice— |
| | God save the King! |

National Anthem. Music and words of the British National Anthem

a certain amount of parliamentary control over its acts. The assembly is forbidden to issue any statement purporting to define the doctrine of the Church of England on any question of theology. It can deal, however, with questions of doctrinal formulae or services or ceremonies, provided that the three houses vote upon the proposals separately. See Church of England; Convocation; Enabling Bill; Laity.

National Assembly. Name taken by the body responsible for the opening stages of the French Revolution, and subsequently by other sovereign bodies in France, and elsewhere.

When the States-General met at Versailles in May, 1789, the three estates, nobles, clergy, and commons or third estate, *tiers état*, sat separately. The third estate invited the others to join in its deliberations, and on their refusal, decided in June to call themselves the National Assembly, claimed sovereign powers, and proceeded to act on this assumption. Having drawn up a new constitution, which Louis accepted, the national assembly was dissolved Sept. 30, 1791.

After the capitulation of Paris, a national assembly was chosen to treat with Germany for peace. It was elected under a law of 1849, and its 753 members met at Bordeaux, Feb. 13, 1871. Like its predecessor, it was a sovereign body, and was responsible for a constitution, the one at present in force. To-day the national assembly is the name given to the Chamber of Deputies and the Senate, when they sit together for the election of a president, the revision of the constitution, or some other special purpose.

In 1918, after the abdication of the Kaiser, it was decided to call a German national assembly to decide the future of the country. The members of this were elected in December by all men and women over twenty years of age, and it met at Weimar early in 1919. See Constituent Assembly; France; History; French Revolution.

National Bank of Australasia. Banking company established in 1858 and registered as a limited liability concern in 1893. Its head office is in Collins Street, Melbourne, and the London office at 7, Lothbury, E.C. It has branches throughout Victoria, New South Wales, and Western Australia. Its paid-up capital is £2,000,000.

National Convention. Name given to the body summoned in Aug., 1792, to revise the constitution of France. Its predecessor, the legislative assembly dominated by

the commune of Paris, had suspended the king. The elections took place at once, 749 members being returned, and the convention declared the monarchy abolished and France a republic. In it fierce party conflicts took place, and its period of life covered the execution of the king and the Reign of Terror. Eventually it drew up the constitution known as the Directory, and on Oct. 26, 1795, it was dissolved. See French Revolution; Girondins; Jacobins; Mountain; Robespierre, etc.

National Debt. Term used for the money owing by a state. It takes various forms, war loans and consols in the United Kingdom and rentes in France, for instance, and is usually divided into permanent and temporary or floating debt. It does not include money borrowed by local authorities except when guaranteed by the state.

From very early days governments have raised loans to meet exceptional expenditure, or in anticipation of the receipt of taxation, but only in modern times, with the development of the credit system, have national debts of large amount and of a permanent character become possible. In England, until the reign of William III, the kings borrowed money for war or other purposes from the Jews, the goldsmiths, or merchants at home or abroad, in London, Milan, Venice, Hamburg, Antwerp, or Amsterdam. These loans, however, were of a temporary character, and were usually repaid with the assent of Parliament by levies upon both real and personal property.

Origin of Bank of England

In 1694 the Bank of England was formed to grant loans to the government, to manage the debt, and to issue loans to the public. Its first action was to grant a permanent loan to the exchequer of £1,200,000 at 8 p.c. and to issue bank notes to the public secured upon the loan. The second step was to offer additional government loans to the public, so that during the war in Flanders the debt rose rapidly, until in 1714 it reached nearly £49,000,000. At first loans were issued at rates of interest varying with the condition of the money market.

This procedure, however, was altered in the reign of George II by selling stock bearing a relatively low nominal rate of interest at whatever discount was necessary, and by providing any additional inducement which the circumstances required. From time to time lottery bonds, with substantial prizes attached, were

offered in order to induce the public to subscribe the necessary funds. The relative ease with which loans could be raised continued to bring about a rapid expansion of debt and, in spite of the creation of an annual sinking fund the total rose to nearly £80,000,000 by 1750, while in 1785, at the close of the American War, it reached £244,000,000, and in 1817, after the close of the Napoleonic War, it had increased to £585,000,000, this amount being mainly in 3 per cent. consols.

Attempts at Redemption

The greatness of this debt was in part due to the issue of loans at a discount, the money actually raised from the issue of this debt being much less than the nominal amount of the loans. According to McCulloch, the principal of the debt amounted to nearly two-fifths more than the sum actually advanced, i.e. the amount of cash actually raised by the issue of the debt up to the end of 1815 was considerably less than £600,000,000. For example, in 1815 the government issued a loan of £27,000,000, the terms of which were that every subscriber of £100 should be entitled to £174 of 3 p.c. stock, and £10 of 4 p.c. stock, making the interest on the loan £5 12s. 4d.

The burdens left behind by the wars of the 18th and the early 19th centuries brought about a more peaceful policy. Until 1876 the efforts to redeem debt consisted chiefly of applying to debt redemption any surplus of income over expenditure, but about 1880 definite sums were charged to expenditure for sinking fund purposes. Since then the debt has been redeemed by means of the old sinking fund, i.e. the budget surpluses, and the new sinking fund, consisting of definite sums included in the expenditures of each year.

The efforts to reduce debt were, however, in some measure frustrated by new creations of debt in connexion with small wars. Thus, the Kaffir Wars and the war with China prevented any reduction of the debt between 1830 and 1850. The Crimean War brought about a fresh increase in the debt from £771,000,000 to £831,000,000, or within £27,000,000 of the sum it had reached at the end of the war with Napoleon. After this there was a long period of comparative peace, and the debt was reduced to £635,000,000 by 1899, the amount redeemed having been nearly £200,000,000 in less than 45 years.

This redemption of debt brought about a steady and persistent rise in the price of 3 p.c. consols, and whereas during the Napoleonic

War the price touched 45, about 1886 it rose to over par, and in 1888 it became possible to arrange for the conversion of the debt, first into 2½ p.c. consols, and subsequently, in 1903, into 2½ p.c. consols. The S. African War, which began in 1899, caused the issue of nearly £150,000,000 of fresh debt, and the total debt in 1903 rose to £798,000,000. Upon the close of the war the efforts to reduce the debt became still more strenuous, and by March, 1914, the total had been brought again to £706,000,000.

At the commencement of the Great War in 1914, the national debt of a little over £700,000,000 was £162,000,000 less than its total at the end of the war with Napoleon.

The Great War fundamentally affected the country's credit. The amount of debt created in five years amounted to £7,165,000,000, and the total debt at the end of March, 1920, was £7,881,893,000, after allowing for the conversion of £228,000,000 of consols, and other obligations bearing low interest, into debt carrying a high rate of interest and of smaller nominal amount. In 1920 the sale of war stores and other special income enabled a substantial sum to be redeemed, and at the end of March, 1921, the total debt had been reduced to £7,644,000,000. In the year ending March 31, 1922, the debt charge was estimated to reach £345,000,000, against a debt charge prior to the war of only £24,500,000.

A considerable part of the existing debt is what is termed floating debt, that is, debt which matures from day to day, and the government endeavoured to overcome this difficulty by offering to convert a large part of the floating debt into long term bonds, at prices which gave total rates of interest ranging from £5 12s. to £5 14s. p.c. over a period of forty years. The Bank of England was directly responsible for the issue of the whole of the Great War loans, as well as for providing the government with temporary loans.

In Jan., 1923, the British government accepted the terms for repayment of its debt to U.S.A. The total debt was £856,000,000, plus interest unpaid for 2½ years, making approximately £900,000,000. The interest is at 3 p.c. for ten years, then 3½ p.c. The total annual payment by Britain is approximately £31,500,000 for 10 years, then £36,000,000 for another 62 years. See Consols; Sinking Fund; Treasury Bill; War Loans.

Sir George Paish

Bibliography. Collection of Valuable Tracts on the National Debt

BRITISH NATIONAL DEBT, MARCH 31, 1920

| Internal Debt: | | £ |
|--|--|---------------|
| Funded Debt (Consols and other Pre-war Debt) | | 314,952,000 |
| Terminable Annuities | | 19,314,000 |
| 3½ p.c. War Loan, 1925-8 | | 62,745,000 |
| 4½ p.c. " 1925-45 | | 13,007,000 |
| 5 p.c. " 1920-47 | | 1,977,109,000 |
| 4 p.c. " 1920-42 | | 64,143,000 |
| 4 p.c. Funding Loan, 1960-90 | | 409,100,000 |
| 4 p.c. Victory Bonds | | 359,500,000 |
| 5 p.c. National War Bonds, 1922 (Oct. 1) | | 203,550,000 |
| 5 p.c. " " 1924 (Oct. 1) | | 26,350,000 |
| 5 p.c. " " 1927 (Oct. 1) | | 212,900,000 |
| 4 p.c. " " 1927 (Oct. 1) | | 101,700,000 |
| 5 p.c. " " 1923 (April 1) | | 212,700,000 |
| 5 p.c. " " 1925 (April 1) | | 11,900,000 |
| 5 p.c. " " 1928 (April 1) | | 149,300,000 |
| 4 p.c. " " 1928 (April 1) | | 48,000,000 |
| 5 p.c. " " 1923 (Sept. 1) | | 153,800,000 |
| 5 p.c. " " 1925 (Sept. 1) | | 18,300,000 |
| 5 p.c. " " 1928 (Sept. 1) | | 237,700,000 |
| 4 p.c. " " 1928 (Sept. 1) | | 26,200,000 |
| 5 p.c. " " 1924 (Feb. 1) | | 26,950,000 |
| 5 p.c. " " 1929 (Feb. 1) | | 42,500,000 |
| 4 p.c. " " 1920 (Feb. 1) | | 5,450,000 |
| Exchequer Bonds, 1920, 1921, 1922, 1925, 1930 | | 319,107,000 |
| War Savings Certificates | | 275,081,000 |
| Straits Settlements Loan (repayable in sterling) | | 1,375,000 |
| Treasury Bills | | 1,058,696,000 |
| Ways and Means Advances | | 204,887,000 |
| | | 6,556,316,000 |
| External Debt (at par) | | 1,278,714,000 |
| Total Dead Weight Debt | | 7,835,030,000 |

Capital raised under special Acts for the interest on and repayment of which provision is made by annuities charged on Votes or otherwise outside the general debt service 46,863,000

Total Debt 7,881,893,000

and Sinking Fund, J. R. McCulloch, 1887; Public Finance, C. F. Bastable, 3rd ed. 1903; Science of Finance, H. C. Adams, 1909; British National Finance, J. W. Root, 1909; National and Local Finance, J. W. Grice, 1910.

as a separate group. The party has an organization with headquarters at Sicilian House, Southampton Row, London, and runs a weekly paper, The British Citizen and Empire Worker.

NATIONAL FINANCE & ITS CONTROL

Sir George Paish, formerly Editor of The Statist

Following the article on National Debt, this article sketches the development of the financial system of the United Kingdom. The items of revenue, e.g. Customs, Death Duties, Excise, Income Tax, are the subjects of separate articles. See also Budget; Civil List; Taxation; Wealth

In the United Kingdom we understand by national finance the revenue and expenditure of the state as a whole, and in this sense it is used here. In a wider sense it may be defined as the collective revenue and expenditure of all the people in the country, and in any case the relation of this factor to the former one cannot be ignored. As generally used it excludes the revenue and expenditure of the various local authorities.

From the historical point of view national finance is the financial system of the English nation, to which was added after 1707 that of Scotland, and after 1800 that of Ireland. It is remarkable for the manner in which it has enabled the British people to obtain self-government through their control of expenditure, and still more for the manner in which it has assisted a small and poor nation to become great and wealthy.

Until 1740 the people of England and Wales did not number 6,000,000, the total national income being only £60,000,000. For that time the foreign trade was not inconsiderable, but the exports of British goods were only £12,000,000 per annum and the imports £8,000,000 per annum. The total wealth of the nation was no more than £500,000,000. The industrial revolution brought with it an enormous increase in the wealth of the country. The nation's total income reached, in 1850, nearly £650,000,000, and the nation's wealth amounted, in 1850, to about £5,000,000,000. This immense growth in income and in wealth enabled the Government to increase its revenue and its expenditure during the same period from £5,000,000 to over £50,000,000.

Great as had been the increase in income, in wealth, and in commerce in the century between 1750 and

National Democratic Party. British political party holding advanced opinions. It originated in a Socialist organization which, in 1915, supported the vigorous prosecution of the Great War. This became, in 1916, the British Workers' League, and later took its present name. At the general election of 1918 the party put forward 27 candidates, ten of whom were returned to the House of Commons, where they elected their own chairman and acted as a separate group. The party has an organization with headquarters at Sicilian House, Southampton Row, London, and runs a weekly paper, The British Citizen and Empire Worker.

1850, that expansion was small in comparison with the subsequent growth. Within less than 30 years from the change in the nation's fiscal policy in the forties its exports grew from £50,000,000 to £256,000,000. Prior to the Great War the national income was computed to be about £2,400,000,000. The national wealth was placed at some £16,000,000,000, the annual export of British produce was £525,000,000, and the imports reached a total of £769,000,000.

The effect of this immense expansion in income, in wealth, in production, and in commerce upon the Government's income and expenditure was naturally very great. While in the 17th century the king's difficulty in balancing a budget of only £1,000,000 led to his downfall, and in the middle of the 18th century it was not an easy matter to make the revenue balance the expenditure at £5,000,000, in 1850 it was found possible to raise a revenue of £52,000,000 and to reduce taxation, while in 1913-14 there was no difficulty in providing the Government with a revenue amounting to the then huge sum of £198,000,000.

Growth of the National Income

In considering the national income, account must be had of the great increase in the number of people to share in it. The growth of income has, however, been much greater than the growth of population, and the average income of the British people prior to the war was over £50 per head, in comparison with only about £10 per head, with a very small population, less than two centuries before.

The expansion in British income from less than £400,000,000 a year at the end of the Napoleonic wars to £2,400,000,000 in 1913 came in large measure from the immense expansion in world income, which was the direct result of the inventions of steam and of machinery in general in the latter part of the 18th, and the earlier decades of the 19th century. It also came from the creation in Great Britain of a free market for the goods of the world, which helped greatly to stimulate production by the knowledge that producers of every country had an equal chance of disposing of their produce. It came, too, from the great amount of capital which the British people supplied to every nation that offered the requisite security, and from the consequent improvement in means of communication.

But great as was the influence of British finance up to 1914, both in war and in peace, all its previous attainments were surpassed during

the Great War. The Government then needed practically unlimited supplies of money for the maintenance of its own fighting forces, and to supply its allies with the sinews of war.

In the Napoleonic wars the Government's expenditure gradually rose from about £22,000,000 a year to £132,000,000, which was equal to the disbursements of only a fortnight during the period of maximum expenditure in the Great War. In the financial year 1913-14 the Government's expenditure was £197,492,000, from which it rose in 1914-15 to £560,000,000, the sum expended upon war in the period from August, 1914, to the end of March, 1915, amounting to £357,000,000. In the following year, 1915-16, the total expenditure rose to £1,559,000,000, of which £1,400,000,000 was for war. These great sums were again exceeded in 1916-17, when the total expenditure was £2,198,000,000, of which £1,973,000,000 was for war. In 1917-18 the total expenditure reached £2,696,000,000, of which £2,402,000,000 was for war.

The war ended in November, 1918; nevertheless in the fiscal year ending March 31, 1919, the total sum expended reached £2,579,000,000, of which £2,198,000,000 was for war. Nor did the warlike outlays cease even then, for in the following year the Government's total expenditure was £1,666,000,000, while in 1920-21 it was £1,195,000,000. Including the military and naval outlays made in 1920-21, the direct cost of the war was about £10,000,000,000 sterling, but, including interest on money borrowed, the cost was about £11,000,000,000. Of this £4,000,000,000 was raised by taxation and £7,000,000,000 by loan.

Loans by Great Britain

These vast sums included the loans of the British Government to the other entente nations. Altogether Great Britain supplied her allies and dominions with loans to a total of £1,947,600,000, of which £557,000,000 was lent to France, £561,400,000 to Russia, £476,800,000 to Italy, £193,400,000 to Belgium, and £144,000,000 to the British Dominions. The task with which, in 1921, the British nation was faced of readjusting its finances, paying off its debt, overcoming the financial and economic consequences of the war, and recovering its prosperity, was a difficult one, and the estimated Governmental expenditure of £1,040,000,000 sterling for 1921-22 was generally admitted to be beyond the power of the nation to maintain permanently.

To turn to the methods by which the national revenue has been raised, it may be said at first that until the revolution of 1688 there was no practical distinction between the revenue and expenditure of the sovereign and that of the state. The king had an income as a landholder, greater in degree but not different in kind from those of his great barons, and as time went on this was increased by the produce of taxes voted to him by Parliament and money obtained in other ways. From this general fund the sovereign discharged all the expenses of the state. In early days the chief of these was the support of his household, the officials of which were the ministers who governed the country. Later, as the feudal system disappeared, he paid the soldiers and maintained arsenals and ships.

Items in the Revenue

The first item in the royal revenue was the income from the crown lands, which, in addition to rent proper, included the feudal dues. Next came a land tax, whether called Danegeld, or scutage, or by some other name, which, in theory at least, was granted to the sovereign by the representatives of the people. Further money came from the profits of the courts of justice and the sale of privileges of various kinds, e.g. charters to towns. In the 13th century, with the growth of international trade, Edward I consolidated the customs duties, the ancient right of the sovereign to a share of merchandise entering the country. Mainly concerned with wool and wine, these duties, at first paid in kind, were soon rendered in money.

Other taxes of the 13th and 14th centuries were the poll tax, which was partly responsible for the rising of 1381, and the hearth money. To bring personal property into the net, a new tax was devised in the 12th century, and this, at first known as tallage and collected only from those who lived on the royal domain, became the tenth and fifteenth, a more general tax frequent in the 14th century. Theoretically it was a tenth of the incomes of persons living in towns and a fifteenth of the incomes of persons living outside towns, but in practice after a time it became fixed at £39,000, this sum or multiples of this sum being raised by a levy on the towns and counties.

The thrifty Tudors imposed few new burdens on the country. They collected the rents, feudal dues, and duties on imports, and at times asked Parliament for so many tenths and fifteenths. Other grants made to

them were known as subsidies, and these gradually replaced the tenths and fifteenths. A subsidy, similar in its incidence to a tenth and fifteenth, produced about £80,000. In addition, Elizabeth raised money by selling monopolies.

The question of finance played an important part in bringing on the struggle between king and Parliament. James I revived the almost obsolete aid of feudal times, and involved himself in a serious quarrel with some of his subjects by his efforts to increase the rates of the customs duties by the exercise of his prerogative. Consequently, when Charles I became king, the chief of these duties, tonnage and poundage, as they were called, were only granted by Parliament to the new king for one year, not, as to his predecessors, for life. Then followed illegal or unconstitutional or unwise attempts to raise money, and the Civil War.

Another step towards the modern system was taken in 1660. Charles II surrendered the right of purveyance and the feudal dues in return for the grant, estimated at £100,000 a year, of an excise duty on beer and other liquors. The idea of the excise had been introduced into England by the parliamentary leaders to provide funds for carrying on the Civil War. It was estimated that Charles II enjoyed from all sources an income of about £1,200,000 a year. The customs duties produced about half that sum, and like his two predecessors he had a revenue from Scotland, but that meant also a corresponding source of expense. In 1663 he obtained the revenue of the post office. During his reign a beginning was made with stamp duties and licences of various kinds.

Changes after 1688

When William and Mary ascended the throne in 1688, an attempt was made to separate their personal expenditure from that of the state proper, but it did not go very far. The hereditary revenues and the excise, estimated to produce £700,000 a year, were set aside for the expenditure of the crown, which included the salaries of judges and civil servants. From the other revenues Parliament proposed to meet the expenses of the army and navy. During this reign the Tudor subsidy, which had become the assessment, was turned into a land tax, and borrowing became an integral part of national finance. In the 18th century increasing expenditure was met by extending the area of the excise duties, soap, paper, glass, and salt being among the articles added, while the rates of duty were raised.

A like process, but on a more extensive scale, was carried out with the customs duties, while stamps and licences did not escape increase.

In 1760, when George III became king, a new arrangement was made. He received, not the produce of certain taxes, but a guaranteed sum of £800,000 a year. He had other sources of income, and he paid out salaries very much as William III had done. In 1782 the civil list, i.e. the income granted to the sovereign, was further regulated; in 1787 the consolidated fund was established. The tendency of these changes was to reduce the charges on the civil list, and this process, carried further on the accessions of George IV and William IV, was completed on that of Victoria.

The Work of Pitt

The reign of George III, however, saw greater changes than these. The industrial revolution made it possible, and the Napoleonic wars made it necessary, to raise far larger sums of money than had hitherto been thought possible. One instrument for this was the income tax imposed by Pitt in 1799. It disappeared in 1815, but was reimposed in 1842, since when it has been increasingly used to provide the state with funds.

As a finance minister, however, Pitt's name is rather associated with the simplification of the customs duties. The reduction in their number was left to Peel, who removed some 1,100 separate duties from the tariff. The death duties, now one of the most fruitful sources of national revenue, may also be attributed to Pitt. In 1796 he introduced the legacy duty on personal property. In 1853 it was extended to cover real property, and other changes were soon made, but the modern duties date in principle from 1894, when a graduated scale was introduced.

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Problem, L. G. Chiozza Money, 1903; The King's Revenue, W. M. J. Williams, 1908; British National Finance, J. W. Root, 1909; National and Local Finance, J. W. Grice, 1910; Parliament and the Taxpayer, E. H. Davenport, 1918; A Financial History of Gt. Britain, 1914-18, F. L. McVey, 1919; Primer of National Finance, H. Higge, 1919; English Public Finance, H. E. Fisk, 1920.

National Gallery. Term usually applied to a collection of pictures and statuary belonging to a nation, and maintained and added to by public funds administered by the government. One of the first of such galleries was founded by Napoleon I when he converted the Louvre into a national museum, and deposited in it a collection of works of art from the treasure-houses of Europe. Many European galleries were originally the private collections of sovereigns.

The National Gallery in London was begun by the purchase by the British government of the Angerstein collection of pictures in 1824. It was notably extended by the purchase, in 1871, of the Peel Collection, and later purchases and gifts have made it one of the most representative collections in Europe. The pictures are arranged according to schools of painting, and the collection is particularly rich in examples of the Flemish and Dutch schools, Rubens and Rembrandt being represented throughout their career, while there are numerous and characteristic specimens of the work of Teniers, Jan van Eyck, Frans Hals, Ruysdael, Hobbema, and Cuyp. The Florentine, Venetian, and Umbrian schools are represented almost equally well, among the gems of the collection being masterpieces by Fra Filippo Lippi, Botticelli, and Michelangelo, Titian, Tintoretto, and Paul Veronese, Piero della Francesca, Perugino, and Raphael. Among the Spaniards Murillo, Velasquez, and Goya, and among the Frenchmen Claude and Poussin are magnificently represented. The British school is displayed from its beginnings, the collection

of Turners being especially fine. The existing gallery in Trafalgar Square was completed and opened in 1838, and reopened after enlargement in 1861. It is controlled by trustees, and a director. See Art; Hermitage; London, Louvre; Painting; Tate Gallery.



National Gallery, London. Façade from Trafalgar Square; in the foreground, statue to General Gordon

National Guard. Organization raised solely for home defence. It comes into being during a period of crisis. France furnished a conspicuous example, when a national guard was legalised by the National Assembly in 1791. Dissolved in 1827 and revived in 1830, it fought in the Franco-Prussian War and was disbanded in 1872. Italy and Greece have had a national guard at various periods.

In Great Britain the volunteers raised to repel Napoleon's threatened invasion were a national guard in all but name, as were virtually the later volunteers. The latter, when they became territorial, were more allied to the regular army, though the administration and organization were on a county civilian basis.

During the Great War the special constables and volunteers, the latter men over military age or unfit for active service, constituted a sort of national guard. One volunteer unit actually assumed the name, the City of London National Guard Volunteer Corps, formed in Dec., 1914. The body of volunteers, who met sailors and soldiers who arrived at the stations in London on furlough, and rendered other useful services, were called generally the National Guard. The body of loyal citizens known officially as the Defence Force raised during the strike menace, April, 1921, was a national guard. In the U.S.A. there are national guard units of the militia in most of the states. *See* Armlet; consult also *The National Guard in the Great War, 1914-18*, A. E. M. Foster, 1920.

Nationalisation. Term used for the taking over and management by the state or nation of anything of public utility, such as land, mines, railways, shipping, etc. In times of revolution, as in France in 1789-90, and in Russia in 1918, this is done wholesale, but the term usually implies a less violent change, a fair price being paid for the property acquired. Thus the British G.P.O., with its allied telegraph and telephone services, has been nationalised, as have the rly. systems of Australia, India, France, and Germany, and in part that of Canada. In Great Britain the nationalisation of the land has been agitated for, as has that of rlys. and shipping. The miners' representatives on the Sankey commission on the coal industry, 1919, recommended nationalisation, and the strikes of 1920-21 were in reality directed towards that end. *See* Land; Socialism.

Nationalists. Name given to any political party that seeks for a country, which is part of a large

unit, some national object, whether independence or home rule. An example is the nationalist party in Egypt, but the one to which the term is generally applied is Irish. This appeared in an organized form about 1870 under the leadership of Isaac Butt, and was strong in the British House of Commons after the general election of 1874, becoming still more so under the direction of C. S. Parnell. Its main object was to secure home rule for Ireland. With about 80 members it exercised considerable influence in British politics, especially when, as in 1892-95, the two main parties therein were fairly evenly balanced. Split after Parnell's appearance in the divorce court in 1890, the party was reunited under J. E. Redmond, but it almost disappeared at the election of 1918, its place being taken by Sinn Fein. *See* Home Rule; Ireland; Parnell, C. S.; Sinn Fein.

Nationality. Generally, the sum of the characteristic differences between groups of persons which arise from divergences of cultural tradition and language. Such a group is called a nation, and should be distinguished from a group living under the same government, which is usually called a state. The boundaries between nationalities, even when geographically separate, do not always correspond with the frontiers of states; and nationality therefore sometimes becomes a source of difficulty to government, as in Egypt and Ireland, and in Bohemia before the Great War. Sometimes, however, one state includes many nationalities without any difficulty, *e.g.* Switzerland.

There is no clear demarcation between the characteristics of a small local group and the more important and permanent characteristics of a nationality, as there is no clear difference between a dialect and a language; but in general a nationality involves a traditional outlook on life, traditional quasi-religious ideals, and a fully developed mode of expression in a language with a literature. Nearly always nationality is connected with some country or district, even when, as in the case of the Jews, the connexion is one of memory.

From the sense of nationality arises the political enthusiasm called nationalism. This arises either from oppression or from an exaggerated sense of the importance of the group. Thus the nationality of the Italians in 1860 was felt to be oppressed by the Austrian government in Italy; but after the victory had been won against Austria, the oppressed group developed an exaggerated sense of importance.

Nationality may be, or may be made to serve as, the basis of a distinct form of government; but it may in certain cases be well developed within the same state together with other nationalities. Of the formative elements in nationality the most important is tradition; by which is meant an inherited admiration for certain types of character and certain kinds of life. Thus, in one nationality wit and skill in living are admired, in another sturdy commonsense and simplicity of customs. In almost all nationalities there are quasi-mythical national heroes who are believed to have been the embodiment of the national ideal; and in every nationality its history is believed to be a record of success and progress of its own excellence. These beliefs, although insufficiently based on evidence, are not necessarily pernicious; but the discovery of the actual scientific facts as to descent, language, and moral or religious tradition will probably weaken the control of the idea of nationality over the minds of men. The fact of national distinctions will then no longer lead to unwarrantable dissensions between those who speak different languages. *See* Ethnology; Language.

C. Delisle Burns

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National Kitchen. Food organization established in Great Britain during the Great War. In June, 1918, the food controller issued an order empowering local authorities to establish and maintain national kitchens, with distributing centres, to supply meals and foodstuffs at moderate rates. When a local scheme for a kitchen was approved by the food ministry, the treasury paid the local authority 25 p.c. of the cost of equipment, and lent it a further 50 p.c. These national kitchens were conducted on business lines. *See* Food Control; Municipal Kitchen.

National Liberal. Name of an influential political party in Germany between 1866 and 1918. It arose out of the liberal tendencies that showed themselves in Europe about the middle of the 19th century, and was national, because it advocated union between N. and S. Germany. That was effected in 1871, and the party helped Bismarck to carry out the reforms that marked the early years of the new empire and supported him in his opposition to the R.C. Church. They broke with him, however, about 1878 over his experiments in

state socialism and protection, and their influence then began to decline. In 1914 they had 47 seats in the Reichstag, but only secured 22 in the National Assembly in 1919. See Germany; Liberalism.

National Liberal Club. London political club. It was formed, Nov. 16, 1882, with W. E. Glad-

stone as president, to further the interests of Liberalism, and to provide a central club in London for Liberals throughout the kingdom. Among its objects was "to found, in connexion with the club, a political and historical library, to be called the Gladstone Library, as a permanent memorial of the services which the Right Hon. W. E. Gladstone has rendered to his country." The inaugural banquet, at which 2,000 members were present, was held on May 2, 1883. The club-house is in Whitehall Place, overlooking the Thames embankment; its foundation stone was laid Nov. 4, 1884, the premises were opened June 20, 1887, and the fine Gladstone Library, May 2, 1888.



National Liberal Club, Whitehall Place, London. Interior of the dining-room

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In 1916-20, when the club was taken over by the war office, members were housed in the Westminster Palace Hotel. There are about 200 bedrooms for use of members, several dining-rooms, a large smoking-room, billiard-room, conference-rooms, etc. The membership is about 5,000, and while having no official status in the Liberal party organization, it is usually regarded as its unofficial headquarters. See Liberal; Liberal Federation, National.

National Party. British political organization. It was formed in Aug., 1917, by a group of Unionists who severed their connexion with the official Unionist party. Its objects were to secure a national as against a class, sectional, or sectarian policy, to promote class unity and confidence between employer and employed, and the unity of the empire in council and

defence. Its inaugural meeting was held in London on Oct. 25 under the presidency of Lord Beresford, and among its leading supporters were Lord Montagu of Beaulieu and Brigadier-Gen. Page Croft, M.P. In April, 1921, the name was changed to the National Constitutional Association.

National Physical Laboratory.

Laboratory for research work founded in 1901 at Bushey House, Teddington, England. It was founded as a public institution for standardising and verifying instruments, testing materials, and determining physical constants. Under the control of the Royal Society at its founda-

tion, its control was divided from April, 1918, between the society and the department of scientific and industrial research. The laboratory is divided into eight sections, dealing with physics, electricity, engineering, aerodynamics, metallurgy, etc. There are two large wind tunnels for testing aeroplane models, wings, etc., and also a large experimental tank for testing ship models. The laboratory has become in a few years, under the directorship first of Sir Richard Glazebrook, F.R.S., and secondly of Sir J. E. Petavel, F.R.S., one of the foremost research laboratories in the world.

National Portrait Gallery.

Building in St. Martin's Place, London, W.C. It contains about 2,000 paintings, sculptures, and drawings of men and women who have figured with distinction in the history of the United Kingdom. No portrait of any living person, except of the reigning sovereign and of his or her consort, is admitted, and no modern copy of an

original portrait. The gallery was founded by Act of Parliament, June 6, 1856. Opened at 29, Great George Street, Westminster, 1859, the collection was housed at S. Kensington, 1869-85; at Bathnal Green Museum, 1885-95.

The existing structure, built 1890-95 in Italian style from designs by Ewan Christian, was opened April 4, 1896, at a cost of £96,000, of which William Henry Alexander, of Shipton, Andover, Hants, contributed £80,000 and the government £16,000 and the site. The directors have included Sir G. Scharf, Lionel Cust, C. J. Holmes, and J. D. Milner. The Scottish National Portrait Gallery, Queen Street, Edinburgh, built in 14th century Gothic style from designs by Dr. Rowand Anderson, was opened in 1889. The building cost over £60,000, and was the gift to the nation of John R. Findlay (1824-98), proprietor of The Scotsman.

National Provincial and Union Bank of England.

English banking company. It dates from 1918, being an amalgamation of the National Provincial Bank and the Union Bank of London and Smith's, each of which was in its turn an amalgamation. In 1919 the union took over the Sheffield Banking Co., and between 1918-20 it acquired four other English banks, in addition to the business of Coutts & Co. taken over in 1919.

It has a half-share in Lloyds and the National Provincial Foreign Bank. It has 960 branches in England and Wales, its head office being at 15, Bishopsgate, London, E.C., where in 1921 a memorial was unveiled to 440 members of the staff who fell in the Great War. Its paid-up capital is £9,300,000.

National Provincial Bank of England.

English banking company. It was established in 1833 and registered as a limited company in 1880. In 1918, having just taken over the Bradford District Bank, it united with the Union

Bank of London and Smith's to form the National Provincial and Union Bank of England.

National Register.

Census of Great Britain taken during the Great War. On Aug. 15, 1915, a register of all the inhabitants of the British islands between the ages of 15 and 65 was taken. Its object,



National Portrait Gallery, St. Martin's Place, London

sanctioned by an Act of Parliament of July, 1915, was to obtain a complete list of men and women with a view to utilising their services if need arose. Particulars were required as to age, occupation, qualification for war services, and nationality. A registration card was given to every person on the register, containing name and a number, also indicating the class in which he or she was placed. The latter was also indicated by a number, these being arranged according to occupations. These cards had to be produced to a competent authority—the police or military—when required. The national register was used as the basis of a subsequent canvass of unenlisted men of military age under Lord Derby's scheme, and later still was utilised by the National Service ministry. After the signing of peace it fell into disuse, although the cards were never called in.

National Relief Fund. British charitable organization. Known also as the Prince of Wales's Fund, it was inaugurated by the prince in Aug., 1914, to receive and distribute money for relief of distress directly due to the Great War. Applications for help to wives and families of sailors and soldiers were dealt with by local branches of the Soldiers' and Sailors' Families Association. For civilians local relief committees were formed. The fund was wound up in Mar., 1921. The aggregate receipts amounted to £6,975,124; amount expended in naval and military relief, £3,978,102, and in civil relief, £2,668,019. Various hospitals, including those for limbless sailors and soldiers, benefited, as did industrial settlements for the disabled. Grants were made to damaged towns on the east coast, British refugees from Russia, and other sufferers. The balance was utilised in connexion with the relief of distress arising from unemployment.

National Reserve. Name given to a body of men formed in Great Britain for national defence, which became, in March, 1916, the Royal Defence Corps (*q.v.*).

National Restaurant. Catering establishment initiated by the food ministry of Great Britain in New Bridge Street, London, during the Great War. Run on the lines of the national kitchens, and producing 3,500 meals daily, it was taken over in 1920 by an organization of ex-service men known as Veterans' Commerce, Limited.

National Review, THE. Conservative monthly, founded in London in 1883, under the editorship of

Alfred Austin and W. J. Court-hope. In 1898 L. J. Maxse became editor, and under his control it became a strong advocate of Tariff Reform and very outspoken in its criticisms of Germany, and of Liberal politicians in Great Britain.

National Service, MINISTRY OF. Department of the British Government created during the Great War to make the best use of the men and women of the nation. Neville Chamberlain was appointed director-general of national service in Dec., 1916, and in Aug., 1917, he was succeeded by Sir Auckland Geddes, under whom the department became a ministry. In Nov. it took over from the war office the direction of recruiting for the army, which henceforward was its main activity. In Nov., 1918, when the war ended, the ministry was merged in that of reconstruction. Its headquarters were at St. Ermin's Hotel, Westminster. See Man Power.

National Service League. Association formed in 1902 to advocate a change in the British army system by abolishing voluntary enlistment, or at least supplementing it by some measure of compulsion. The president of the league was Lord Roberts. It came to an end in Feb., 1921, and the remaining funds were handed over to the Boy Scouts' Association. See Compulsory Service; Conscription.

National Sporting Club, THE. Headquarters of British boxing. Founded on the site of Evans's old house in King Street, Covent Garden, London, in 1891, it issues its own code of rules. The earl of Lonsdale has been president since its inauguration. See Boxing.

National Trust. British society for preserving places of historic interest or natural beauty. Founded in 1895 and incorporated in 1907, it is governed by a council, of which half is nominated by the chief learned societies in the United Kingdom. It has been the means of saving from destruction several fine buildings, and it holds in trust for the nation Wicken Fen, Box Hill, Minchinhampton Common, and estates in the Lake District and elsewhere, as well as several old buildings, including Barrington Court, near Ilminster, and Kanturk Castle, Cork. It has also the care of 8,000 acres of Exmoor. Up to Jan., 1921, it had saved about a hundred properties. Its offices are at 25, Victoria Street, London, S.W.

National University of Ireland. Irish university, founded in 1908. It arose owing to the demand of the Irish Roman Catholics for university education, and is in a sense the successor of the Royal

University of Ireland, dissolved in that year, two of whose colleges—viz. University College, Cork, and University College, Galway—are included in it; while a third university college was opened in Dublin. S. Patrick's College, Maynooth, is a recognized college. It is controlled by the Roman Catholics, although there are, strictly speaking, no religious tests. There are faculties of commerce, science, and engineering, in addition to the more venerable ones. Medical degrees are granted, and those of master and doctor of Celtic studies. Irish is an obligatory subject at the matriculation examination. See Cork; Dublin; Galway; Ireland; Education.

Native (Lat. *nativus*, natural). Literally, something due to birth or origin, as opposed to something acquired. As an adjective, it is used in various senses, e.g. native land, native customs, etc. As a noun, it refers to the original or older inhabitants of a country as distinct from those who went there later—for instance, the natives of Africa. See Aborigines.

Native. Term used in mineralogy for minerals, particularly metals, found in the free state. Gold is the principal metal found native, while such metals as zinc and aluminium are never found in that state. See Metal.

Native Currants (*Leptomeria billardieri*). Shrub of the natural order Santalaceae, native



Native Currants. Branches with flowers. Inset, above, end of branch with leaves; below, fruit

of Australia. The numerous, slender branches are erect, and without leaves except near their extremities, where they are very small. The minute white flowers are borne in spikes and produce small greenish-red, currant-like berries, which are fleshy and edible. They are acid, and somewhat astringent, but they make a good preserve and a cooling, acid beverage. They are not related to the British garden currants, or to the dried currants of E. Europe.



Nativity. The Manger. From the painting by Van Dyck, depicting the Virgin and Child at Bethlehem
Corsini Palace, Rome

Nativity. Name of several festivals in the Christian churches. That of Christ's Nativity (Lat. *Festum Nativitatis*; Fr. *Noël*), usually known as Christmas Day, has been celebrated since the 5th century on Dec. 25. The Nativity of the B. V. M., a Roman Catholic festival, mentioned in the 9th century, is kept by Greeks and Latins on Sept. 8; and that of S. John Baptist on June 24. Representations of Christ's Nativity occur often in carvings on early sarcophagi, ivory carvings of the 8th and 9th centuries, in MS. illuminations, stained glass, and wall-paintings. On the Morning of Christ's Nativity is the title of an ode by Milton, 1629. In astrology the word is used as a synonym for horoscope. See Jesus Christ; Mary.

Natrolite. In mineralogy, a sodium aluminium silicate of the zeolite group. Semi-transparent to transparent, it is yellow, red, grey, or colourless with a glassy lustre, and is found in cavities in basalt and other igneous rocks. Natrolite is used as a gem and for ornament, being capable of receiving a very high polish. It is found in Bohemia, Tirol, Ireland, and Scotland, etc. See Zeolite.

Natron. Lake of Africa. It is about 20 m. S. of Lake Magadi. Both these lakes contain enormous deposits of soda. See Magadi,

Natterjack (*Bufo calamita*). Running-toad or golden-back. It is a toad with a general resemblance to the common species, yet

with several points of distinction that make identification easy at sight. It is of rather slighter build, and the limbs are proportionately shorter, while the warty skin is smoother, and down the centre of the back runs a thin yellow line. It progresses by walking or short runs, instead of hopping, and is found mostly in sandy situations, drier than those affected by the common toad. The male has an internal vocal sac which distends the throat when the natterjack utters his rattling note, which is suggestive of the call

It is a native of Europe, including Britain. See Toad.

Nattier, JEAN MARC (1685-1766). French painter. Born in Paris, he studied under Nattier, and at the Academy. He secured the patronage of Louis XIV, and was at first employed on drawings for the engravings of Rubens' pictures. The last forty years of his life were devoted to the painting of portraits.



J. M. Nattier,
French painter
After Voiriot

Natural. Literally, existing as from birth, innate or inborn. It appears in phrases such as natural law and natural rights. (See Rousseau.) A natural child is a synonym for an illegitimate child. As a noun natural is sometimes used for an idiot. See Insanity.

Natural. Musical sign ♮ used to neutralise the effect of a sharp or flat. It probably derives its name from the key of C, which is known as the natural key, and has no sharps or flats. Its shape comes from the letter h (h) the old German name for B ♮ (B ♮ being called B). See Flat; Sharp.

Natural Gas. Name given to certain gases occurring in mineral deposits. By boring in search of oil many reservoirs of natural gas have been tapped, particularly in the U.S.A., and there are large

supplies in Canada, especially in Ontario. It is supposed to have been used in China and Persia in ancient times. In the U.S.A. it was first used in 1821, and it has been used at Pittsburg for iron smelting. A supply was discovered at Heathfield, in Sussex, in 1897 and used for lighting and fuel purposes. See Fuel.

Natural History. Term which in its original meaning was used for the study of all natural objects. As such, the study of natural history included that of zoology, botany, geology, and allied sciences. The term has gradually become less broad in its meaning, until now it is confined to zoology and botany, but particularly the former, though natural history clubs still include geology. Natural history is used for the more popular side of the subjects, as distinct from their scientific study. See Botany; Geology; Zoology.

Natural History Museum. Collection of objects of natural history, really part of the British Museum. The building is in Cromwell Road, South Kensington, London, S.W. It was opened in 1881 to accommodate the natural history collections in the British Museum, and so relieve the congestion there, and between 1881-85 the exhibits were removed to their new home. There are departments of zoology, entomology, botany, geology, and mineralogy. See British Museum.

Naturalism. In philosophy, the theory that denies the existence or intervention of any being or principle outside, and higher than, nature, and interprets the whole of experience in terms of natural science. It thus resembles materialism, which, however, is chiefly concerned with the essential nature of things, while naturalism deals with the course and causes of events.

In literature and the arts, naturalism is, strictly speaking, synonymous with realism, i.e. a close imitation of reality, but has come to imply insistence on the more sordid and repellent aspects of life and nature, owing to the tendency of many naturalistic artists and writers, such as Zola, to emphasise in this manner their antipathy to idealization.

In painting, the name was originally given to a group of Neapolitans, who claimed to found their art on direct observation of nature, and who had dispensed with Academy teaching. Their influence was transmitted through F. Ribera to Spain, where it found a nobler expression in the naturalism of Velasquez.

Naturalization. Term used in law to denote the process whereby an alien becomes a subject. In almost every civilized country there are now naturalization laws. In the United Kingdom it was, until 1870, necessary for an alien who desired to become a naturalized British subject to procure the passing of an Act of Parliament in his favour.

Naturalization in the United Kingdom is now governed by the British Nationality and Status of Aliens Act, 1914, as amended by 8 & 9 Geo. 5, c. 38. By these statutes the home secretary may grant a certificate of naturalization to any alien who applies for one, if the applicant satisfies the home secretary (a) that he has resided in British dominions for five years at least, of which the last year before the application must be in the United Kingdom, and four years within the preceding eight years in any part of the British dominions; or has been in the service of the crown for at least five years within the preceding eight years; (b) that he is of good character and has an adequate knowledge of the English language; (c) that he intends to reside in the British dominions or to continue in the service of the crown. The certificate has no effect until the applicant has taken the oath of allegiance. A woman who lost her British nationality by marrying an alien and whose husband is dead, or marriage dissolved, may apply without evidence of residence. In special cases, the home secretary may grant a certificate, although the four years' residence or five years' service have not been within the preceding eight years.

A naturalized alien is in the same position as a natural born subject. Alien infant children become naturalized by their father's naturalization, if included in the father's application; but on attaining 21 may make a declaration renouncing British nationality. A minor may be naturalized on a special application for special reasons. An alien naturalized before 1914 may apply for a certificate under the Act of 1914. The home secretary's power to refuse to naturalize is absolute, and cannot be challenged in a court of law.

If the home secretary is satisfied that a naturalization certificate has been obtained by false representation or fraud or material concealment, or that the naturalized person has shown himself disloyal by act or speech, he may cancel the certificate; and he shall do so if (a) during any war the person has unlawfully traded or communicated with the enemy, or been associated

knowingly with any business carried on in such a manner as to assist the enemy; (b) within five years of the date of the certificate the person is sentenced in any court in the British dominions to (1) a fine of £100, or (2) imprisonment for 12 months, or (3) penal servitude; (c) was not of good character at the date of the certificate; (d) since the certificate has lived for at least seven years out of British dominions, except as business representative of a British subject, firm, or company, or in the service of the crown; (e) remains, according to the law of that state, a subject of a state at war with his Majesty.

Canada, Australia, New Zealand, South Africa, and Newfoundland have power to issue Imperial certificates of naturalization to persons qualified, with slight modifications, under the above statute. In the U.S.A. an alien can only be naturalized two years after his declaration on oath before a court of his intention of being naturalized, and after five years' residence in the country. He must specifically renounce allegiance to every foreign power, including that to which he formerly belonged, and must also renounce any title of nobility. *See Alien.*

B. Storry Deans

Natural Philosophy. Term originally meaning the study of the material world as a whole, now usually called natural science. In a restricted sense the term, which in general use tends to become obsolete owing to the sharper distinction now drawn between philosophy and science, is retained in the sense of physics (*q.v.*) at Oxford, Cambridge, Dublin, and the Scottish universities.

Natural Region. Term used in geography to indicate a unit area of a definite type. The Mediterranean region is a unit area with a definite physical and climatic character and, consequently, with a definite type of natural vegetation; and the application to it of the term "natural region" implies first, that it may be inferred that similar physical and climatic conditions, such as prevail in California, would necessarily produce a similar natural flora, and secondly, that the control of human development exercised by the Mediterranean area with its specific limitations will be exerted similarly wherever regions of this type occur. *See Geography.*

Natural Theology. Branch of theology concerned with proofs of the existence and nature of God, apart from revelation. It is claimed that if God had not revealed Himself to man through the Bible or in

any other way, we should still have sufficient reason, if not proof, for believing in His existence.

The ontological argument is based on Plato's theory of universal and necessary ideas, developed by S. Anselm and advocated in a rather different sense by Descartes. All men, it is argued, possess or can possess the notion of a perfect being. But perfection implies existence, for a non-existent being lacks something, *viz.* existence, and is therefore not perfect. Therefore a perfect Being must exist. The validity of this argument was criticised by Kant, who argued that we can conceive perfection either as existent or non-existent.

The cosmological argument views the universe as an effect, and maintains that its existence necessarily implies a cause, *i.e.* God. Or, expressing it differently, the universe exists contingently and dependently; and this implies the existence of the absolute and independent. This argument assumes the contingency of the universe, but fails to prove it.

The teleological argument may be stated thus: The more we study the world of phenomena, the more we see how everything tends to some end and serves some purpose. Hence we have evidence on all hands that phenomena are the result of design on the part of an intelligent designer, *i.e.* God. The Bridgewater Treatises and other more or less scientific works were written in support of this thesis, but the discovery of the laws of evolution has thrown a very different light on the subject.

Another argument points out that mankind gives a general consent to the idea of a God, and urges that what is universally believed cannot be without foundation. But a general notion may conceivably be erroneous. Another argument is based upon design in history, and urges that the whole course of events points to a controlling influence from without.

It has also been urged—notably by Kant—that the moral nature of man points to a categorical imperative external to himself, whose authority he is unable to ignore. Man feels that he ought to do this and ought not to do that—irrespective of his personal wishes or immediate advantage. *See Deism; God; Theism; Theology.*

W. J. Wintle

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Nature. Word used in a number of senses. Originally it meant birth, origin, or the source of life. In a metaphysical sense it is used for the source or essence of life of the universe. The uncultivated state, as distinguished from that due to civilization, is said to be a state of nature, and from such meaning are obtained the phrases nature worship, nature study, back to nature, etc. The essence of a substance or some outstanding quality is often spoken of as its nature, e.g. mustard is of a pungent nature.

Nature. British scientific periodical. It was founded Nov. 4, 1869, by Sir Norman Lockyer, and is published weekly by Macmillan & Co. It presents a regular record of scientific progress, makes a feature of correspondence, reports of learned societies, reviews of scientific books, notices of scientific papers, etc.

Nature Study. Study of natural history, especially by school children. It takes an important place in the curricula of American schools, where its value is recognized from the point of view of developing the child's powers of observation, and of giving him or her an intelligent interest in the outside world. In rural districts, where the chief industry is agriculture and its allied occupations, it may have a vocational value.

Nature study, to the extent of the examination of the growth of certain plants and of the properties of simple natural objects, is now almost universally included in the curriculum for young children, and the school journey and the annual camp of various organizations tend to assist the movement. See Education; Kindergarten.

Nature-Worship. Ritual expression of reverence for those phenomena of the visible universe which are regarded as capable of bringing to man good or ill. Students of primeval man assume a stage in his history when he thought of individual objects in nature, especially those displaying movement or action, as animated by powers akin to his own. The action of some of them could always be relied upon, and aroused no anxiety. That of others could not be predicted, and hence there emerged a more or less conscious perception of the supernatural, and the need for establishing relations therewith. Some phenomena became the object of approach or avoidance by processes usually classed as magical; experience showed others to be stronger than man, and to call for propitiation.

The conception of natural objects as animated beings akin to man passed into that of personalized objects or powers, amenable to control or appeal. Out of this arose the idea of supernatural beings dominating the phenomena which were held to be their abode. So, too, there emerged from the animistic conception of human ghosts and of natural objects animated by spirits, human or non-human, the notion of a spirit-haunted world on the one hand, and of separate souls on the other.

Primitive thought deals with individual things; man comes into relationship, intellectual or emotional, with this particular rock, or that particular stream. The formulation of general ideas demands a mental effort which some unprogressive peoples apparently never attained. It was only after prolonged reflection that man reached the abstract notion of the elements, and became capable of thinking of earth, water, fire, or sky as a whole. Nature-worship was at first, if not always, the ritual approach to a multitude of nature-spirits or nature-gods.

In a remote past worship was offered to animals and plants, because upon their goodwill seemed to depend the food-supply. Indeed domestication is best explained as an unexpected outcome of their segregation as objects of sanctity under the guise of tribal totems. After men became herdsmen and tillers they realized the need for establishing relations with the powers on whose goodwill—rather than on that of the herds and crops themselves—their livelihood was seen to depend. Animal worship and tree-worship accordingly passed into that of the phenomena behind them, including rivers and wells, mountains and rocks, storm and rain, thunder and fire, moon and sun. See Introduction to the History of Religion, F. B. Jevons, 3rd ed. 1904; The Golden Bough, J. G. Frazer, 3rd ed. 1907-15.

Naucratis. Ancient Greek colony in Lower Egypt. Situated near the modern Nebira on the Canopic arm of the Nile, it was founded by traders from Miletus in the 7th century. Under Aahmes II, c. 564 B.C., it monopolized Greek trade in Egypt.

The site was identified by Flinders Petrie in 1885, and excavated

by him, further work being done by D. G. Hogarth in 1899. The chief building found was the Hellenion, a fortified store-house and sanctuary for Greek residents in Egypt. See Naucratis, W. M. Flinders Petrie, 1886.

Nauen. Town of Germany, in Prussia. Situated 17 m. W.N.W. of Potsdam, in Brandenburg, it is a busy manufacturing place, with a wireless station. Pop. 10,000.

Naugatuck. Borough of Connecticut, U.S.A., in New Haven co. It stands on Naugatuck river, 5 m. W. of Waterbury on the New York, New Haven and Hartford Rly., and manufactures knitted goods, india rubber articles, cutlery, and chemicals. Naugatuck was incorporated as a borough in 1893. Pop. 15,000.

Nauheim. Town and watering-place of Germany. It is in Hesse-Darmstadt, on the river Usa and the N.E. slope of the Taunus mts.



Nauheim, Germany. Front of Kurhaus and terrace

on the Frankfurt-Cassel Rly. The saline waters used for bathing and drinking are rich in iron and carbonic acid. They are used to cure gout, rheumatism, heart and nervous troubles. The salt extracted from the waters yields annually from 1,500 to 2,000 tons. Pop. 6,000. Pron. Now-hime.

Naumann, FRIEDRICH (1860-1919). German politician and publicist. Born at Störmthal, Saxony,



Friedrich Naumann, German politician

he was educated at Leipzig and became a Lutheran pastor. In 1896 he helped to found the national socialist party, and the weekly periodical *Die Zeit* was established as its organ, with Naumann as editor. This journal, later amalgamated with *Die Nation*, and the political organ *Hilfe*, he edited until 1907, when he was returned as Radical deputy for Heilbronn.

In 1914 he upheld the violation of Belgian neutrality. After the downfall of Germany in 1918 he became leader of the new democratic party.

Naumann's name was very prominent in the Great War owing to his advocacy of a central European league, *Mitteleuropa*. In addition to his *Mitteleuropa*, 1915, Naumann wrote *Weltpolitik* and *Social Reform*, 1898; *Navy and Reaction*, 1899; and *Democracy and Kaiserdom*, 1900. He died at Travemünde, Aug. 24, 1919.

Naumburg. Town of Prussia. It stands on the Saale, near its confluence with the Unstrut, about 30 m. from Halle. The Protestant cathedral of the 12th and 13th centuries, partly Romanesque and partly Gothic, has four towers. Another interesting building is the restored church of S. Wenceslaus, and there is a town hall of the 17th century. The industries include the making of textiles, chemicals, etc. In the Middle Ages Naumburg was in the margraviate of Meissen and then in the bishopric of Zeitz. In 1564, consequent upon the change of the Reformation period, it passed to the electors of Saxony, and it remained Saxon until handed over to Prussia in 1814. Pop. 27,000.

Naupaktos (mod. Lepanto). City of ancient Greece, in the county of the Locri Ozolae, on the N. coast of the Corinthian Gulf. It had a good harbour, now almost entirely silted up. The Athenians settled Naupaktos with Messenians deported after the war with Sparta in 455 B.C., and used it as a naval base in the Peloponnesian war. Naupaktos was in the possession of Aetolia, when it was taken by the Romans after a siege in 191 B.C.

Nauplia or **NAVPLIA**. Town and port of Greece. Anciently the port of Argos, 6 m. N.W., it lies on the N.E. side of the gulf of the same name, and has a fair shipping trade. In the Middle Ages it belonged to Venice. It passed to the Turks, from whom it was taken by the Greeks in 1822, and was their capital until 1834. The rly. from Corinth runs to the head of the gulf, and then divides, one branch going S.E. to Nauplia, and the other W. to Kyparissia and S.W. to Kalamata. Pop. 12,000.

Nauplia, GULF OF. Arm of the Aegean Sea, Greece. It lies between two peninsulas of the Morea, is 20 m. across its entrance and 30 m. long. Spezzia is the chief of numerous islands. The Xeria river on which Argos stands flows into it.

Nausea. Sensation of impending vomiting. It is a symptom of many disorders. See Vomiting.

Nausicaa. Ancient Greek heroine mentioned in the *Odyssey*, vi. She was the daughter of Alcinoos, king of the Phaeacians, and the shipwrecked Odysseus found her playing at ball with her maidens on the shore. Pitying his plight, she conducted him to her father, by whom he was hospitably entertained. See *Odyssey*.

Nautch Girl (Hind. *nāch*, dance). Indian dancer. These girls are carefully chosen for their beauty when young to be priestesses to the god Rondzu, the fifth daughter being supposed to be specially suitable. Apart from their dancing in the temples, they are hired to amuse guests by dancing and singing. The dance con-

posita. They were very similar in form to the existing nautilus (*g.e.*), the only remaining living genus of the order. See *Cephalopoda*.



Nautch Girl. Punjabi dancing girls from Delhi, with their musicians

Nautilus. Genus of cephalopodous (head-footed) molluscs, related to the cuttles, but having a spiral chambered shell. It is distinguished from all other cephalopods by having four gills instead of two. It lacks the tentacles of the cuttles, but has fringed lobes round the mouth. It crawls by means of its foot on the bed of the ocean like a snail, and feeds upon other molluscs and small crustaceans. It is also able to swim like the cuttles in a series of backward jerks by expelling water forcibly from its siphon.



Naumburg, Prussia. Early 17th century town hall and part of the Market Square

sists of posturing and slow steps, each part of the body being made to express emotion. The dancers' costumes are very rich, covered often with jewels. See Dancing.

Nautical Almanac. Publication containing tables and astronomical data for the use of seamen. The best known is the British *Nautical Almanac*, while others are published by the U.S.A., France, and Germany. The British *Nautical Almanac* was first issued in 1767 under the superintendence of the Royal Astronomical Society, and from 1834 by the Admiralty. It is usually issued two or three years in advance for the sake of mariners. The offices are at 3, Verulam Bldgs., Gray's Inn, London, W.C. See *Meteorology*.

Nautiloidea (Gr. *nautilus*, sailor, *eidos*, form). Fossil cephalopoda. Remains of nautiloidea are found in Cambrian to present-day de-

There are probably only three living species of nautilus, of which the pearly nautilus is the best known. It gains its name from the beautiful, white, pearly shells, valued by collectors, but in the living state the exterior of the shell is dull and porcellaneous, the colour pale brown with broad bands of darker brown. Internally the shell is remarkable for its division by septa or thin walls into a series of chambers which mark stages in the growth of the animal. The nautilus occupies the outermost chamber only. The others are united by a slender tube or siphuncle which extends to the apex of the shell. The purpose of this is not yet known. On some parts of the coast of India the flesh is salted and dried for food.

The nautilus is of interest to the palaeontologist as being a survival of one of the oldest groups of exist-

ing animals. It is found only in the Indo-Pacific Ocean at depths below 10 fathoms. The living animal is rarely seen, though empty shells are washed ashore in abundance. Throughout the long voyage of the Challenger only one living example was dredged. The diagram shows the many-chambered cell in section with the animal filling the newest or outer chamber. The Argonaut is often called the paper nautilus. See Argonaut; Cephalopoda.

Nauvoo. City of Illinois, U.S.A., in Hancock co. It stands on the Mississippi river, 13 m. N. of Keokuk, Iowa. It was founded 1839 by Mormons, and in the year of their expulsion, 1846, had a pop. of nearly 15,000. In 1850 a colony of French socialists occupied Nauvoo and remained there until 1858. There are remains of several Mormon buildings. Pop. 1,500.

Navaho OR **NAVAJO.** N. American Indian tribe. They live mostly on reservations in New Mexico and Arizona. Of Athapascan stock, they number about



Navaho. Squaw and man from Arizona

28,500. Their arid pasture-lands, averaging 6,000 ft. in alt., have been improved by irrigation, and are under partial cultivation. They are skilful weavers. Their belief in a nature-goddess, "she-who-grows-young," puts womanhood on a high plane.

Naval and Military Club. London club. Founded in 1862, its membership is open to officers, past or present, of the fighting services. The house is 94, Piccadilly, W.

Naval Architects, INSTITUTION OF. British technical society. Founded in 1860, it holds meetings annually for the discussion of ship design and general questions of interest to the members. The offices are at 5, Adelphi Terrace, W.C.

Naval Brigade. Name for a body of sailors landed from a fleet to fight on shore. Famous brigades of this kind were the naval brigades of the Shannon and Powerful, which helped to defend Ladysmith during the South African War. The name is also applied to the



Nautilus. Sectional diagram of interior of shell of pearly nautilus. a. Mantle; b. Dorsal fold; g. Muscle attaching body to shell; i. Chamber of shell; k. Funnel; n. Hood; p. Fringed lobes surrounding mouth; s. Eye; x. Shell and septa; z. Newest chamber

mixed naval or marine brigade, consisting of brigades of the R.N.D., battalions of R.M.L.I., and naval volunteers and reservists, who were sent to assist in the defence of Antwerp in Oct., 1914. See Antwerp.

Naval Cadet. Name given to boys training for commissions in the British navy. They are trained under a scheme inaugurated in 1903. Before that date all candidates had to be nominated by the First Lord of the Admiralty, and were selected by competitive examination, there being a sharp distinction between the engineer and executive branches.

Under the present scheme the nominations are abolished, and the training for both branches is the same for the first four years. Up to April, 1921, the first two years were spent at Osborne and the next two at Dartmouth, but in that year Osborne College was closed and the cadets transferred to Dartmouth. Application for a boy's admission has to be made when he is about 12½ years old, and from the candidates recommended by a committee the First Lord selects those who are to be admitted as cadets, subject to their passing a qualifying examination.

The education afforded at Dartmouth is like that given at any public school, but there is a constant naval atmosphere, and, in addition to the teaching of the elements of navigation and seamanship, much more time is devoted to science and practical mechanics. Cadets are passed out on a final examination at which they are classified by merit, the rewards being, in conjunction with their next course, the possibility of a maximum gain in seniority of three months. Cadets who fail in this examination are allowed to make a second attempt at the end of the following term.

Cadets next pass to one of the training cruisers Cornwall and Cumberland, where they remain about 8 months, including vacations, and do six months' cruising. This time is wholly spent in professional instruction. The course being completed, the cadet, now about 18 years of age, passes to a ship of the fleet as a midshipman. A few cadets are admitted direct to Dartmouth (q.v.) from the mercantile training ship Conway.

Naval Construction, DEPARTMENT OF. Branch of the British admiralty. It is the department responsible to the admiralty board for the construction of warships of all kinds. At its head is a director known as D.N.C., and with him is a director of warship production (D.W.P.). See Admiralty; Navy.

Naval Discipline Act. The British navy's code of common law. Formally described as 29 and 30 Vict. c. 109, the Act provides for the maintenance of discipline in the Royal Navy, and is amended from time to time.

Naval Division, ROYAL. Body of volunteers raised by the British admiralty in the Great War. Each battalion was named after a famous admiral, e.g. Anson, Drake, Hawke, Hood. The headquarters were at the Crystal Palace, London, where the men were trained. Popularly known as the R.N.D., a detachment was sent to Antwerp in Oct., 1914, and, being cut off during the retreat, considerable numbers were driven into Holland and interned. Part of the force fought in Gallipoli in 1915, and later in France, where the division was ultimately disbanded and distributed among other units. As the R.N.D. it captured Beaumont, Nov. 13-14, 1916, in the battle of the Ancre. Viscount Rothermere provided funds to erect a monument there to the officers and men who lost their lives in that action, in which his son, Lieut. the Hon. Vere S. T. Harmsworth, of the Hawke battalion, fell. The main memorial will be in London, to take the form of a monument at the foot of the Duke of York's Steps. See Freyberg, B. C.

Naval Prize Bill. British Act of Parliament which governs the computation and distribution of naval prize money. The largest amount in prize money ever gained by a single British ship fell to a small sloop, and amounted to nearly a million pounds. To-day, however, prize money counts for comparatively little, though owing to the Great War over £9,500,000 was paid out in the period Aug. 14, 1914, to March 31, 1920. See Prize Court; Prize Money.

Naval Reserve, ROYAL. British naval unit. It was established in 1859 to form a reserve from which to draw in the event of war, and consisted entirely of officers and men of the mercantile marine.



Naval Reserve officer's badge

Officers could join as midshipmen during their apprenticeship period, or as sub-lieutenants, or paymasters, up to the age of 30. They had to do at least one year's training aboard a warship, and also to undergo instruction in gunnery and torpedo schools. While in the R.N.R. they received a small annual retainer. Seamen and engine-room ratings joined for a period of five years at a time, and could serve for four such periods, receiving retainers of from £6 to £10 per year, and were liable to be called up for service when required.

R.N.R. ratings are now enrolled for a term of five years, and the total period of any man's service in the reserve will not exceed five terms of five years each, the last term being for shore and harbour service only. The higher ratings of chief engine-room artificer, petty officer, and stoker petty officer, instituted during the Great War, were retained under the new scheme and, in addition, chief petty officer ratings were instituted for the seamen and stoker branches.

The R.N.R. was mobilised on Aug. 3, 1914, and by Aug., 1917, the officers had increased from fewer than 2,000 to close upon 12,000. It served in almost every sea, and took part in mine-sweeping and in patrol duty. Men of the naval reserve were engaged in historic single fights, as those of the Ortega and Karlsruhe; Carmania and Cap Trafalgar; Alcantara and Greif. See Mercantile Marine; Navy, British.

Navan. Market town and urban dist. of co. Meath, Ireland. Standing where the Blackwater falls into the Boyne, it is a junction for the M.G.W. and G.N. Rlys., 30 m. from Dublin. The town has a trade in agricultural produce and some manufactures. It is also



Navan arms

a hunting and fishing centre. Settled by the English, it was fortified and given a corporation. It sent two members to the Irish parliament until 1800. Market day, Wed. Pop. 3,900.

Navarino, BATTLE OF. Destruction of a Turkish fleet by the British and their allies, Oct. 20, 1827. It was the decisive battle of the Greek War of Liberation. Egyptian forces, under Ibrahim Pasha, had landed in the Morea in 1825, under the nose of the Greek fleet, which had lingered too long in the Cyclades. Ibrahim inflicted a terrible military defeat upon the Greeks, and established himself at Navarino, whither a combined Egyptian and Turkish fleet transported reinforcements from Crete. A little later a large fleet arrived, bringing him a notable accession of strength from Egypt. Meanwhile an allied squadron proceeded to Navarino, Oct. 20, 1827.

It was hoped that the Turks would at once enter into negotiations, but the situation had become so tense that when a British boat was fired upon the whole line burst into flame, and a furious fight raged at the closest quarters. Probably no battle had ever been more speedily decisive. Within two hours the Ottoman fleet was destroyed, and next morning Codrington wrote: "Out of a fleet composed of 81 men-of-war, only one frigate and 15 smaller vessels are in a state ever to put to sea again." The battle was tactically complete, and it was so strategically decisive that Ibrahim's communications were cut. Navarino, now called Pylos, is a seaport in the Morea, with a fine harbour. See Pylos.

Navarre. Former kingdom of S.W. Europe. Its territory lay on the western borders of France and Spain at the angle of the Bay of Biscay; and it included the W. part of the Pyrenees with a small part of Gascony and a considerable but varying area in Spain. The population was mainly Basque. When the Saracens conquered most of Spain in the 8th century, the Gothic Christian nobles held their ground in the northern mountains, and by degrees established kingdoms.

Of these, in the early years of the 11th century, the strongest was that of Sancho the Great, king of Navarre, who died in 1035. A hundred years later, under Alphonso I, Navarre seemed likely to absorb the Christian monarchies. In 1234, however, the crown passed to Theobald, count of Champagne, a feudatory of France, and in 1284 Navarre became an appanage of the French crown by the marriage of King Philip IV with his heiress. On the death of Louis X, 1316, Navarre passed to his daughter and then to her son Charles the Bad, being again parted from the French crown, which passed by male succession only.

In the 15th century the crowns of Navarre and Aragon were united by the marriage of Blanche of Navarre to John of Aragon; on his death, in 1479, Aragon went to Ferdinand, his son by a second marriage, while Navarre was claimed by Catherine of Foix, his grand-daughter by the first marriage. Catherine married the French Constable, Jean d'Albret, and retained French Navarre with the royal title, while Ferdinand annexed Spanish Navarre. Her daughter, Jeanne d'Albret, married Antony of Bourbon, and was the mother of King Henry of Navarre, who succeeded to the French throne as Henry IV in 1589—the first of the Bourbon kings of France. In 1620, eleven years after his death, French Navarre ceased to have the status of a kingdom.

Navarre. Frontier prov. of N. Spain, bounded N. by France and sloping S. to the Ebro. Traversed by the Pyrenees and the Cantabrian Mts., it is almost wholly mountainous, reaching in Mt. Adi an alt. of 4,930 ft. Excepting the Bidassoa, which flows N. to the Bay of Biscay, the rivers run S., falling into the Ebro. On the hills, pine, beech, oak, and chestnut forests abound; the valleys are fertile, yielding cereals, flax, wine, and oil. Sheep and cattle are reared on the grassy uplands, and game and fresh-water fish are abundant. The chief exports are livestock, wine, oil, wool, leather, and paper. The principal towns are Pamplona, the capital, and Tudela. Its area is 4,055 sq. m., Pop. 316,400.

Navarrete, BATTLE OF. Fought between the English under the Black Prince and the Spaniards, April 3, 1367.

The Black Prince entered Spain in the interests of Pedro the Cruel, king of Castile, with some 30,000 English, French, and mercenary troops. The Spaniards, under Henry of Trastamara, the rival of Pedro, soon came into touch with him, and joined battle at Navarrete, a village near the French frontier. The English were in three lines, the first under Sir John Chandos, and they fought dismounted with archers on their flanks. The first of the Spanish lines, also dismounted, was under Du Guesclin. At first the English were forced back, but their archers came to the rescue, the prince hurried up his reserves, and soon the Spaniards were in flight, pursued by the English. The battle is described by Froissart.

Nave (Lat. *navis*, a ship). In ecclesiastical architecture, the largest, i.e. the middle, section of a church divided by piers or columns

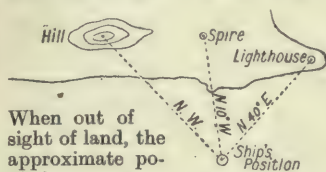
into three parts. As such the nave includes the choir and the height of the clerestory, but when the choir is shut off from the body of the church, it is commonly excluded from the term nave. See Basilica; Cathedral; Choir.

Navel. Scar in the centre of the abdomen, which marks the spot where the umbilical cord entered the organism during the period of development in the uterus or womb.

Navigation. Art of directing a ship from one position to another, and of determining its position at sea at any moment. A chart and a mariner's compass are required. Before the invention of the mariner's compass, mariners were compelled to keep in sight of land.

In order to determine the course between two positions, charts have been drawn of different portions of the globe. These charts have the latitude and longitude and the true or magnetic north marked on them. The present position of a vessel and the one it is desired to reach are plotted on the chart, which thus gives the course to be made good. The direction of this course is read off from the points of the compass pointed on the chart. To discover from the chart the course to be steered in order to arrive at any desired position, the mariner must know the position of his vessel. In sight of land this is easily found by taking compass bearings, i.e. the direction by compass, of prominent objects such as a lighthouse, or church spire. The position of these objects is shown on the chart. Three or more objects are selected, so that the compass bearings cut one another at a fairly large angle when shown on the chart. Through each object on the chart is then drawn the observed compass bearing, and the point where these lines cut is the position of the ship at the time of observation.

For example, a mariner observes that the summit of a hill bears N.W., a church spire N. 10° W., and a lighthouse N. 40° E. The ship's position is where the three lines cut as shown in the figure:

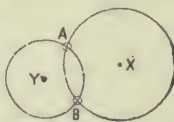


When out of sight of land, the approximate position at any time can be found by calculating the number of nautical miles the vessel has travelled along the course from the last known position and

then plotting this distance on the chart. Such an approximate position is called dead reckoning (D.R.).

The exact position of a vessel when out of sight of land is obtained by observation of the heavenly bodies. Observations of stars or planets give the most accurate results, but can only be made during the hours of darkness. They are easily observed, as many are usually visible at the same moment. The positions ascertained by observations of the sun are, however, not so accurate as those obtained by the stars.

A sextant and a chronometer showing Greenwich time, or a known error on Greenwich time, are required for taking an observation. The altitude of the heavenly body is measured by the sextant and the time is noted at the instant the altitude is observed. The observer obtains the arcual distance of his position from the point where, at the instant of observation, an imaginary line joining the centre of the earth and the heavenly body cuts the earth's surface. This imaginary point on the earth's surface is known as the geographical position of the heavenly body. The observer then knows that he is on a circle whose centre is the geographical position of the body observed, and whose arcual radius is the observed altitude. Another circle can be drawn for another star observed simultaneously, or for the same body after an interval of time. The ship's position is then at one of the points of intersection of the two circles.



Navigation. Diagram showing the geographical positions X, Y, of two heavenly bodies, and A, B, the points of intersection of circles giving the position of a ship. See text

In practice it is not usually possible to draw the circles owing to the excessive length of the radii, so the following method is adopted. The altitude is observed at any moment and the Greenwich time noted. The D.R. position is calculated at this moment. Supposing the ship to be at the D.R. position, the altitude of the heavenly body observed can be calculated trigonometrically, as can also the direction, i.e. the bearing by compass. Thus three factors are known: (a) The observed altitude, which must be correct, as the observer has measured it with his sextant. (b) The calculated altitude which is only correct provided the ship is in the D.R. position. (c) The direction of the heavenly body. The D.R. position is put on the

chart and through this position the direction of the heavenly body is drawn. The difference between the observed and calculated altitudes is noted, and from this on the chart the true position is obtained, drawing what are known as position lines. This method is that commonly used by mariners.

A. E. Buckland, R.N., D.S.O.

Bibliography. Wrinkles in Practical Navigation, S. T. S. Lecky, rev. ed. 1890; Navigation and Nautical Astronomy, F. C. Stebbing, 1903; Modern Navigation, W. Hall, 1909; Admiralty Manual of Navigation.

Navigation Acts. Term applied to a number of enactments designed to regulate shipping to the advantage of British ships. Such legislation is to be found in the reigns of Richard II, Henry VII, and Elizabeth, but Cromwell's Navigation Act of 1651 was the first comprehensive enactment. This Act, directed against the very profitable Dutch carrying trade, refused admission into English ports of all goods not carried in English ships, or in the ships of the country of origin, while English goods could be exported only in English vessels. It benefited English shipping, but it raised the price of imports and caused a war with the Dutch. Enactments in 1660 and 1663 forbade colonial trade to any but English ships, a restriction destined to be a great source of trouble with the American colonies. The Acts were completely repealed in 1849, and in 1854 even the coastwise trade was thrown open.

Navigators' Islands. Original name of the islands in the Pacific Ocean now known as the Samoan group (*g.v.*). They were so named by their discoverer, Louis Antoine de Bougainville, 1768.

Naville, ÉDOUARD HENRI (b. 1844). Swiss Egyptologist. Born at Geneva, June 14, 1844, he studied



E. H. Naville,
Swiss Egyptologist

in Geneva, London, Paris, and Berlin. In 1869 he proceeded to Egypt, where from 1883 onwards he carried out important excavations, partly on behalf of the Egypt Exploration Fund. They included the store-city of Pithom, Goshen, the city of Onias, and the temple of Deir-el-Bahri. His translated works include, *The Old Egyptian Faith*, 1909; *Archaeology of the O.T.*; *Was the O.T. written in Hebrew?*, 1913; and *The Text of the O.T.*, 1916.

Navvies' Corps. British labour unit in the Great War. It was the name popularly given to the labour battalions of the Middlesex regiment, in the raising of which Lieut.-Col. John Ward, M.P., took a leading part, himself becoming commander of the 19th 2nd (Public Works Pioneers) Middlesex regiment in May, 1915. Composed chiefly of labourers or navvies, the corps rendered excellent services in the Great War in constructing roads, and in other work for which they were specially fitted. *See* Middlesex Regiment; Ward, John.

Navvy. Name applied to a labourer employed on road making or other digging operations. The word is an abbreviation of navigator, the term applied in the late 18th and early 19th centuries to a labourer employed in digging canals. It was later applied to unskilled labourers on roads and railways. A steam navvy is a machine for digging. *See* Excavator.

Navy (Lat. *navis*, ship). Term used for the collection of men and ships that form the force a country maintains for fighting at sea. Originally it described all a nation's vessels, whether used for trade or warfare. At the present day, practically every country which has a seaboard has a navy, although a number of them are of little value as fighting units.

The first navy of note was that of Athens, although as early as 664 B.C. both Corinth and Corcyra had fleets of fighting ships, as a little later had nearly all the little states of Greece. The Persians and Egyptians had fleets about this time, and the battle of Salamis was fought in 480 B.C. between the Persians and a navy composed of ships supplied by Athens and her allies. The Athenian navy, which owed much to Themistocles, appears to have been well organized, with an efficient and trained personnel, and its services to Athens and her allies during the Peloponnesian War gave the world its first great lesson in the value of sea power. Unlike the European navies of the 16th century, it was a collection of vessels, the long ships, maintained by the state solely for fighting purposes, not one assembled hastily from various ports and owners to meet an emergency.

Rome and Carthage had each a navy, evidently of considerable size, and one was established for the eastern empire. Much of their work consisted in the suppression of pirates, who then, as later, swarmed in the Mediterranean. Partly for the same reason navies were maintained by Venice and Genoa and other trading states. The

later navies of modern European powers arose from the few vessels maintained by the sovereigns. Spain had, early, a considerable navy, while England and the Dutch republic soon made reputations on the sea. Scotland and France were among other countries that possessed small royal navies in the 15th century, as did Portugal and Denmark. Somewhat later, Frederick William laid the foundation of the navy of Prussia, and Peter the Great rendered a like service to Russia.

There was in early navies no sharp distinction between a warship and a merchantman. The merchantman was, of necessity, always ready to fight, and the navy was simply a collection of these, after extra men and arms had been provided, reinforced perhaps by a few vessels built more especially for fighting purposes. In the 18th century navies came to consist of ships built solely for fighting, and it was such that fought the battles of the Napoleonic period.

For many years after Trafalgar there was little change in the essentials of the world's navies, but in the second half of the 19th century began the evolution of the modern navy, a collection of specialized vessels, endless in variety and size, yet

each designed for a particular piece of work and all alike embodying the last efforts of science and skill.

As regards navies in general before the Great War, the tendency was to look at them from the point of view of relative strength, and, in Britain, to the position of that country in that connexion. The British navy had long been unquestionably stronger than any other taken singly, but its directors were forced to consider the possibility of a combination against it. Thus was evolved the two-power standard, i.e. the theory that the British navy should be equal to the next two combined, though some argued for a three-power standard, while others asserted that Britain's position demanded that she should possess 50 per cent. of the world's naval strength. The two-power standard was maintained against France and Russia, but the rapid growth of the German navy imperilled it. *See* Sea Power; consult also Naval Annual, 1886, fol.; All the World's Fighting Ships, F. T. Jane, 1898, fol.

The following table, taken from a parliamentary paper and other sources, 1922, shows the strength of the various navies of the world on Feb. 1, 1922, the numbers including vessels built and building:

| | Battle-ships | Battle Cruisers | Light Cruisers | Des-troyers | Sub-marines |
|--------------------|--------------|-----------------|----------------|-------------|-------------|
| Great Britain.. .. | 22 | 8 | 51 | 184 | 93 |
| U.S.A. | 31 | 0 | 9 | 315 | 102 |
| Japan | 11 | 7 | 12 | 58 | 24 |
| France | 10 | 0 | 5 | 53 | 50 |
| Russia | 2 | 4 | 9 | 24 | 59 |
| Germany.. . . . | 8 | 0 | 3 | 16 | 0 |
| Italy | 12 | 0 | 10 | 58 | 43 |

THE BRITISH NAVY AND ITS HISTORY

John Leyland, Author of *The Royal Navy*

In addition to the companion article on the British Army, see Sea Power. See also biographies of Nelson and other seamen, the accounts of Jutland, Lepanto, Nile, Trafalgar and other battles and the descriptions of the various warships, e.g. Battleship; Cruiser; Submarine. See also Guns; Torpedo; articles on Dreadnought and other individual warships and col. plate of naval uniforms

The history of the British navy may be said to begin with the long ships of King Alfred, though Offa, King of Mercia, had a fleet before him. Alfred's ships marked a great advance upon their predecessors. They carried a single mast and a square sail; some of them had as many as 60 oars. Canute was strong at sea beyond all his rivals. Harold, in 1066, had a considerable fleet. The nearest approach to a permanent force was the organization of the Cinque Ports, where the barons, experienced seamen, kept their busses, cogs, and other vessels at the disposal of the king in return for the enjoyment of

certain privileges. This system was economical and contributed to rapid mobilisation in time of a national emergency.

Richard I, in the Crusade of 1190, was the first English monarch to employ a great fleet on a distant enterprise. John made some beginning of a fixed organization by appointing a "keeper of the king's ships." At this time two very important actions were fought when Longsword, earl of Salisbury, in 1213, went over to Damme and destroyed the combined French and Flemish fleet before it could put to sea, and when Hubert de Burgh, by a fine act of seamanship, defeated the

French off the North Foreland. Edward I, when he invaded Scotland, took up a great deal of shipping in the west country ports, and Edward III, when he besieged Calais in 1347, had a fleet of 745 vessels, drawn from most of the ports in England, some from Ireland, and others from Bayonne, and Spain. The victory of Sluys, in 1340, marked the zenith of English sea power in medieval times. Admirals began to be appointed in Edward I's reign. Guns were mounted in the 14th century, at first firing over the gunwale, and afterwards through port-holes.

It was the greater specialisation of ships for fighting purposes that led to the organization of a distinct naval establishment. The Cinque Ports silted up, and Portsmouth and Plymouth came into prominence. The cog, the chief fighting ship of the early Plantagenets, was displaced by the great ship in the time of Henry V. In Tudor times ships were specially built for naval purposes. Henry VII had a famous ship named the *Regent*, carrying four masts and a bowsprit and armed with 225 small guns called serpentes. Henry VIII's great ship was the *Henry Grace à Dieu*, an imposing vessel, carrying two lines of guns on her lower decks, and another on her half deck and forecastle. Massive structures rose like fortalices at the bow and stern, and the latter had eight decks and five lines of guns. There were important dockyards at Portsmouth, Woolwich, and Deptford, and the Trinity House was developed to regulate buoys, beacons, and light-houses.

Systematic Shipbuilding

The great explorations of the 15th and 16th centuries resulted in rapid development in shipbuilding, navigation, and organization. A committee of officers of state, including the lord admiral, shipwrights, and seamen, met in 1583, and gave an impulse to many developments. In place of the great ships, deep-waisted and castled at either end, came the weatherly sailing ships of war, capable of keeping the seas and carrying a powerful armament on the broadside. The *Triumph* of 1,000 tons with thirty-four 30-pounders, and the *St. Matthew*, *White Bear*, *Victory*, *Mer Honour* and *Arc Royal* were types. The great defeat of the Spanish Armada in the fighting of many days in 1588, all the way up the Channel, was one of the decisive battles of the world.

The reign of James I saw the division of the royal fleet into rates and the institution of squadrons, or

groups of ships, for the defence of the narrow seas, by means of a summer guard and sometimes a winter guard. Phineas Pett built, in 1610, the *Prince Royal*, a two-decked ship with quarter-deck and forecastle, and in 1637 came the *Sovereign of the Seas*, the first three-decker in the navy. The government of the navy had rested with the lord high admiral and a board of principal officers, but the lord high admiral Buckingham had a council of commissioners, who supervised dockyard affairs and built two ships a year for five years in succession. Naval administration became more and more complex, and the system underwent successive changes. Though all the Stuarts had a sound comprehension of the need of naval force, corruption overspread the organization under Charles I. The sailors suffered terribly, and it was said that "foul weather, naked bodies, and empty bellies made the seamen voice the king's service worse than galley slavery."

Navigation Act of 1651

The men of the Commonwealth imparted new vigour and earnestness to the navy, and endeavoured to abolish the corruption in the dockyards and establishments. The fleet was employed both in home waters and in the Mediterranean. It gained rapidly in numbers and strength, becoming a permanently organized force in every department; the officers were trusted and there was better pay, food, and clothing for the men. The need of a sufficient and active fleet was recognized, for the Dutch were England's strongest commercial rivals in many seas. England struck at their commerce by the Navigation Act of 1651, and war became inevitable.

England was also in a state of virtual war with France, and her seamen searched neutral Dutch ships and exacted by force a salute in the Channel. It was inconceivable that Tromp, who was in command, would submit to Blake and Bourne without a struggle, and the first battle took place in the Straits of Dover in May, 1652, and after a stout fight Tromp withdrew. Nearly all the fighting was concerned with the protection of convoys. The inconclusive battle of the Kentish Knock (Sept. 27) was the first action not directly concerned with the attack upon and defence of floating trade. At the end of Nov. Tromp defeated Blake, and brought a huge convoy of 400 sail through the Straits into safety. The Dutch were finally defeated off the Thames and at the Texel in May and July 1653.

At the Restoration, when James, duke of York, became lord high admiral, a great impetus was given to the internal organization of the fleet and the strengthening of its administration. The navy was thenceforth directed by principal officers, who were men of experience actually bred to the sea—Sir George Carteret, Sir Robert Slingsby, Sir William Batten, and others, with Samuel Pepys as clerk of the acts. Their successors became the navy board, and existed long after the office of lord high admiral had been placed in commission in the board of admiralty.

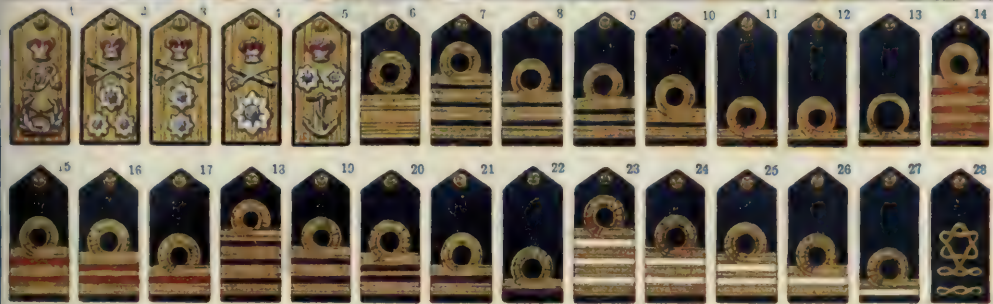
Wars with the Dutch

In the second Dutch War the fleets were organized on a great scale, and Opdam was severely beaten off Lowestoft on June 3, 1665; but in June of the following year the four days' battle in the Straits of Dover ended in the retirement of the English fleet to the Thames. De Ruyter and Van Gent afterwards entering the river and capturing or destroying the ships at Chatham in June, 1667. In the Third Dutch War, 1672, originating in the old rivalry of commerce, the French were England's allies. But in the great battle of Solebay off Southwold, May 28, De Ruyter was again victorious, though he suffered severely. The last fight was the battle of the Texel, Aug. 11, 1673, but it was not a victory for England.

James II did much for the betterment of the naval service, and had an establishment of 173 vessels, including 9 first-rates, 11 second-rates, and 39 third-rates. They went over to William III, in whose reign the long struggle with France began. But the fleet which Colbert had created was a powerful weapon for Louis XIV, and a great invasion of England was planned. Torrington fought, under orders, the battle of Beachy Head on June 30, 1690, afterwards retiring to the Thames and preserving his fleet in being. The army of Louis was at last ready in 1692, and was embarked. Tourville, the French admiral, was ordered to attack the English, however strong they might be. He was utterly defeated and his fleet destroyed by Russell in the battle of Barfleur and at La Hogue in May, 1692.

The navy was for a time supreme, and under its aegis the resources of the empire grew, and English trade spread on every sea. But as the years passed it weakened and became corrupt, and the spirit of formalism and undue caution grew in the service; jealousies divided it; English ships were inferior to the French,

LIEUT. COMMANDER (UNDRESS FROCK COAT) (FULL DRESS) (REVIEW ORDER) (FULL DRESS) (FULL DRESS) (UNDRESS)



SUB-LIEUT. (FROCK COAT) TROPICAL UNIFORM ENG.-COMMANDER (UNDRESS) LIEUT. R.N.R. (FULL DRESS) LIEUT. R.M.L.I. (REVIEW ORDER) MIDSHIPMAN (FULL DRESS) SURG.-COM. (UNDRESS) PAYMASTER (UNDRESS)

Centre panel shows overcoat rank badges: 1. Admiral of the Fleet, 2. Admiral, 3. Vice-Admiral, 4. Rear-Admiral, 5. Commodore, 1st. Class, 6. Commodore, 2nd. Class, 7. Captain, 8. Commander, 9. Lieut. Commander, 10. Lieut.-colonel, 11. Sub-Lieutenant, 12. Gunner and Boatswain, 13. Commander, 14. Surgeon, 15. Surg.-Lieut., 16. Surg. Lieut. Commander, 17. Surg. Lieut., 18. Engineer Captain, 19. Engineer Commander, 20. Eng. Lieut. Commander, 21. Eng. Lieut., 22. Eng. Master, 23. Paymaster Captain, 24. Paymaster Commander, 25. Paymaster Lieut. Commander, 26. Paymaster Lieut., 27. Paymaster Sub-Lieut., 28. Royal Naval Reserve Lieutenant.

NAVY: UNIFORMS AND RANK BADGES OF OFFICERS IN THE BRITISH NAVY

Specialty drawn for Harmsworth's Universal Encyclopedia by J. F. Campbell



MASTER-AT-ARMS SEAMAN Ldg. TORP. MAN CHIEF ENG.-ROOM PRIVATE R.M.A. SICK BERTH PETTY OFFICER (LAMMY SUIT) (TROPICAL UNIFORM) ARTIFICER (REVIEW ORDER) STEWARD (UNDER 4 YEARS)

Centre panel shows badges worn on sleeves. 1. Gunner's Mate and Gunlayer (1st Class). 2. Gunner's Mate. 3. Gunlayer (1st Class). 4. Ditto (2nd Class). 5. Ditto (3rd Class). 6. Chief Petty Officer, P.O., and Seaman Gunner. 7. Torpedo Gunner's Mate. 8. Torp. Coxswain. 9. Leading Torp. Man. 10. Chief P.O., P.O., and Seaman Torp. Man. 11. Chief Yeoman of Signals. 12. Yeom. of Signals. 13. Ldg. Signalman. 14. Signalman. 15. Rangefinder (1st Class). 16. Chief P.O., P.O., and Chief Telegraphist. 17. Ldg. Telegraphist. 18. Tele-

graphist. 19. Ordinary and Boy Telegraphist. 20. Physical Training Instructor (1st Class). 21. Ditto (2nd Class). 22. Shooting Badge. 23. Mechanician. 24. Chief Stoker P.O. 25. Stoker P.O. 26. Ldg. Stoker. 27. Stoker. 28. Armourer. 29. Armourer's Mates and Crews. 30. Blacksmiths, Carpenters, etc. 31. All other artisans. 32. Sick-berth staff. 33. Ship stewards (civil branch). 34. Bugler. 35. Petty Officers (under 4 years). 36. Leading Seaman (Rating Badge, also Good-Conduct stripe).

NAVY: UNIFORMS AND BADGES OF PETTY OFFICERS AND MEN IN THE BRITISH NAVY

Specially drawn for *Harmsworth's Universal Encyclopedia* by J. F. Campbell

largely owing to the reactionary influence of the navy board. The inconclusive action of Mathews off Toulon in Feb., 1744, was the natural outcome.

But the cloud lifted as the splendour of Anson and Hawke arose. That great seaman, Anson, in his famous circumnavigation of the globe (1740-44), made his ships a school for seamen, and when he came to the Admiralty he exercised a powerful influence throughout the whole naval service. He chose for high appointments officers like Hawke—the precursor of Nelson—Boscawen, Saunders, Rodney, Howe, and Keppel. Naval architecture and construction rapidly advanced. Anson broke up the French combination by his defeat of De la Jonquière in May, 1747; and Hawke struck his blow at L'Étenduère in October.

Seven Years' War

The Seven Years' War found England not fully prepared. Corruption had not been uprooted, and only by a vigorous use of the pressgang, and the offering of bounties could men be obtained. The war was to be waged in the Channel, the Atlantic, the Mediterranean, India, on the N. American coast, and in the W. Indies. The French were active in N. America, where Britain's settlements were imperilled, and French reinforcements traversed the ocean despite the efforts of Boscawen.

The year 1759 was rendered glorious by the fall of Quebec, the capture of Guadeloupe, and an action between Pocock and D'Aché on the Coromandel coast, which ultimately was the cause of the decay of French power in India. Hawke's magnificent victory at Quiberon Bay was the decisive action of the war.

But France soon found means and support for new efforts. Her navy had been almost annihilated, but regeneration followed, while profligate rule and jobbery again did its evil work in British naval administration. When the American colonists rose against British rule, and France, Spain, and Holland were hostile, Britain was ill-prepared for a world-wide struggle, though fleets went to sea in a far better state than ever before. There was an inconclusive action off Ushant, powerful forces appeared fighting several battles in Indian waters, and across the Atlantic, Howe was compelled to act on the defensive against D'Estaing.

Rodney arrived in the W. Indies in March, 1780, and fought on April 17 a famous action with De Guichen. The situation was very grave, and Britain's commerce

was seriously crippled. The blockade at Brest did not prevent De Grasse from going out to the W. Indies with a vast armament. He defeated Graves off the Chesapeake, and Cornwallis was compelled to surrender at Yorktown. Another object of the French with Spanish assistance was to capture Jamaica. Their plans were completely shattered by Rodney's action of April 12, 1782, off Dominica. Gibraltar was magnificently relieved by Howe on Oct. 11, and, though Britain lost much in the war, she consolidated her possessions, and emerged with a navy trained in the struggle and brought to high efficiency by its officers.

Britain was indeed far better prepared for war with the French Revolution than were the French for the great struggle which began in Feb., 1793. Her officers were men of high character and great attainments, and though hard conditions had laid the seeds of mutiny in the fleet, the navy carried the issue triumphantly to its close. Ships increased in numbers, and every available ship was made ready for sea. Hood occupied Toulon in aid of the French Royalists, but had to withdraw as the revolution gained strength. Jervis, the future Lord St. Vincent, went to the Mediterranean.

The Glorious 1st of June

In the Channel Howe, on the glorious first of June, 1794, almost destroyed the French fleet under Villaret-Joyeuse, though the great grain convoy from the U.S.A. arrived in safety at Brest. Bridport completed the victory by his action of June 23, 1795, and the French fleet withdrew from the seas, except for raiding efforts. Jervis's great victory off Cape St. Vincent, Feb. 14, 1797, and Duncan's destruction of the Dutch fleet at the Texel, Oct. 11 in the same year, put an end to all the great schemes of invasion. The mutiny of 1797, at Spithead and the Nore, was a serious danger; but the navy was sound at heart, and the disaffection was suppressed.

Napoleon Bonaparte's magnificent schemes of Eastern dominion were taking shape. Great armaments were prepared at Toulon, and the operations for the invasion of Egypt were begun. Nelson was ill-provided; but reinforcements came, and the French fleet was finally destroyed in the battle of the Nile, Aug. 1, 1798. After the peace of Amiens had been concluded, March 27, 1802, the naval establishments in England were subjected to severe examination, with the object of

putting an end to the corruption and waste under the administration of the navy board, which the Admiralty had been unable to control.

Practically the navy was kept on a war footing during the peace, and was highly efficient, though its numbers were inadequate. Bonaparte's great successes on land had deprived Britain of her allies, and he was planning once more a great blow at the heart of his principal enemy. But Cornwallis and his admirals blockaded Brest and the Atlantic ports; Keith was farther N.; Calder was off Ferrol and Nelson off Toulon. Nelson left Spithead on Sept. 15, 1805, and arrived off Cadiz on the 28th. On Oct. 21 he engaged Villeneuve, the immortal battle of Trafalgar was fought, and the main French fleet was utterly destroyed.

There was a certain recovery in the French navy, but it was easier to build wooden ships than to find their officers and men. The Berlin Decrees against Britain's commerce were the mark of naval failure. When it was designed to send a French fleet from Brest and Rochefort to the W. Indies in 1809, it was driven into the Basque Roads and destroyed. The royal navy was the base of all the operations in the Peninsular War. Stringent inquiry into the civil affairs of the navy, chiefly under the impulsion of St. Vincent, did much to purify the administration. The war with the U.S.A. in 1812 was a war of frigate fighting, in which the Americans, with superior frigates, gained some remarkable successes. The fight between the Shannon and the Chesapeake, on June 1, 1813, was the most famous action of the war.

The fleet was employed against Barbary pirates; in the operations that led to the destruction of the Turkish-Egyptian fleet of Navarino; in the Russian War of 1854-55, when its supremacy was undisputed; and in the Burmese and China Wars. Administratively, Sir James Graham and Sir Thomas Masterman Hardy, as first lord and first sea lord of the Admiralty, in 1831, set the system practically upon the footing it held in 1914.

Introduction of Steam

The introduction of steam brought about profound changes in the navy. There began a long contest between the gun and the armour. The torpedo was invented, and gained year by year in range and destructive power. New classes of ships were introduced—torpedo-boats, destroyers, and submarines. The invention of the steam turbine imparted a fresh

impetus to power. The progressive and fearless administration of Lord Fisher gave the navy ships mounting nothing but big guns, with an auxiliary or secondary armament for anti-torpedo purposes. Thus the Dreadnought became the first of the magnificent vessels which made England the undisputed mistress of the seas.

The fleets were of unexampled power; they were brought to the highest pitch of efficiency; they were provided with repair and auxiliary ships, which made them largely independent of the dockyards, and the whole naval front was swung round from the Channel to the North Sea. Oil to a very great extent replaced coal as fuel. The practical and scientific training of officers and men progressed. After the war came a period such as has followed most wars—naval reductions, the sale or breaking-up of ships, and discussion of war lessons and types of ships.

A few figures will illustrate the expansion of the navy. In the year of Trafalgar the fleet had 120,000 officers and men and cost £15,035,630. The smallest yearly sum ever subsequently expended on the navy was in 1835-36, when the numbers were 26,500 and the expenditure was £4,434,783. On Jan. 1, 1914, the numbers were 144,871, and the expenditure for 1913-14 was £48,809,000. The strength of the navy at the armistice, Nov. 11, 1918, was 415,000, but by Nov., 1919, it had been reduced to 162,000, and the 1921-22 estimate was for 127,500 men. The navy expenditure for the financial year 1923-24 was estimated at £58,000,000. For the naval reduction, 1921, see the entry Washington Conference.

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Navy Board. Former department of the British naval administration. It dates from the reign of Henry VIII, and was that part of the board of admiralty responsible for civil administration, including the work of shipbuilding, dockyards, etc., as distinct from the office of lord high admiral. The organization was changed from time to time, but the divided control was maintained. In 1683 the work of victualling the fleet was taken from the navy board. This divided control came to an end in 1831, when both the navy board and the victualling board were abolished as

distinct departments, and came under the direct control of the admiralty. In the U.S.A. the department of the navy which corresponds to the British admiralty is sometimes known as the navy board. See Admiralty, Board of.

Navy Club, ROYAL. British club. It is an amalgamation, effected in 1888, of the Navy Society, a dining club of naval officers founded in 1765, and of a similar company called the Navy Club, of which Nelson was a member, founded in 1785. Dinners are now held to celebrate naval victories and the like.

Navy League. British society founded in 1895 for the purpose of arousing and maintaining interest in the navy, and keeping it strong and efficient. The league carries on propaganda by means of lectures and publications in all parts of the British dominions. Its head office is at Victoria Street, London, S.W.

Navy League, GERMAN. Organization founded on April 30, 1898, to popularise the Kaiser's big navy policy. The league grew rapidly in strength, and at the outbreak of the Great War in 1914 its membership was more than a million. Prince William of Wied was its first president, succeeded later by Grand-Admiral von Koester.

Navy List. Official handbook of the British navy. It was first issued in 1814, and has been published monthly almost ever since. It gives in normal times the names of all officers in the different branches of the service, and also the names of all H.M. ships and the services they are engaged upon. The quarterly Navy List contains full information about the various admiralty departments, in addition to the details published in the monthly lists.

Navy Records Society. British society founded for the purpose of printing rare and unpublished works of naval interest. It aims at making accessible the sources of British naval history and elucidating questions of naval archaeology, construction, administration, organization, and social life.

Nawanagar. Native state and town of India, in Bombay Presidency. The state occupies the N.W. of the peninsula, with a coast-line on the Gulf of Cutch and the Little Rann of Cutch. Native food grains and wheat are grown. It has an area of 3,791 sq. m. Pop. 349,000. The town is a port on the Gulf of Cutch, on the N.W. coast of the Kathiawar peninsula, 160 m. W.S.W. of Ahmadabad; it contains cloth factories, has a pearl fishery, and considerable trade. It is a rly. terminus. Pop. 45,900.

Naworth Castle. Seat of the earl of Carlisle. In Cumberland, 11 m. from Carlisle, it was built in the 14th century by a member of the Daere family. In 1577 it passed by marriage from the Daeres to the Howards. Restored after a fire in 1844, it is built round a central courtyard. The chief apartments are the great hall, the oratory, and the rooms occupied by Belted Will (Lord William Howard). Naworth has a station on the N.E. Rly. See Carlisle, Earl of; Howard.

Naxos OR NAXIA. Largest island of the Cyclades group, in the Grecian Archipelago. It has a length of 21 m. and a breadth of 15 m.; area about 175 sq. m. Mountainous, picturesque, and fertile, its culminating point is Mt. Zea, alt. 3,300 ft. It is noted for its choice wine, and produces cereals, oil, fruit, cotton, and emery. Its marble quarries have been worked ever since the 6th cent. B.C. The capital is Naxos, a seaport city on the N.W. coast; it has an old castle, a remnant of the Venetian period, when, with neighbouring islands, it formed a Venetian dukedom. It was captured by the Turks in 1566. Colonised by Ionians, about 1000 B.C., it suffered in the Persian wars before joining the Athenian league. Off Naxos, 376 B.C., the Athenians utterly defeated the Spartans in a naval engagement. Pop. 20,000.

Nayar OR NAIR. People on the Malabar coast, S. India. The Narae of Pliny, situate between Point Dely and Cape Comorin, they numbered, in 1911, 1,129,466. A community rather than a caste, with exogamous clans, they retain various matriarchal customs, matrilineal descent, and a form of union, *sambandham*, which involves no marital obligation and no dowry. This received government recognition in 1896. See Polyandry.

Nayarit. State of Mexico. It is centrally placed on the Pacific coast, and is backed by the Sierra de Nayarit. The chief river is the Santiago or Rio Grande de Lerma. The principal products are wheat, sugar, tobacco, coffee, and palm oil, and the mining of gold, silver, and lead is carried on. Tepic is the capital. Area 11,300 sq. m. Pop. 175,750.

Nazarene. Term used in the N.T. In Matt. ii, 23, it is said that Joseph went and dwelt in a city called Nazareth, "that it might be fulfilled which was spoken by the prophets, that He (i.e. the Messiah) should be called a Nazarene." The particular words spoken by the prophets have not been preserved in the O.T. as we have it,

unless the writer in some way identifies Nazarene with Nazarite (cf. Judges xiii, 5, "the child shall be a Nazarite, and shall begin to save Israel"). In any case, in Matt. ii, 23, the primary meaning of Nazarene is taken to be "a dweller in Nazareth," and Jesus is often so described (Mark i, 24; Luke xviii, 37; John xix, 19; Acts iii, 6, etc.). Nazareth being a small place, the term Nazarene was sometimes, though not always, used in scorn. At Antioch the first Christians were called Nazarenes, and they continued to be so called by the Jews (Acts xi, 26). In Acts xxiv, 5, S. Paul is called "a ring-leader of the sect of the Nazarenes."

Nazareth. Town in Galilee, situated on the slope of a hill halfway between the Lake of Galilee

Nazrana OR **NAZAR.** Term commonly used in India for a ceremonial present, especially one given by an inferior to a superior. The word properly means a vow or votive offering, and the root may be seen in the name of the Hebrew devotees, the Nazarites. Other forms of the word are nuzzerand and nuzzer.

N.B. Abbreviation for Lat. *nota bene*, mark well; North Britain; New Brunswick.

N.C.O. Abbreviation for non-commissioned officer.

Neagh. Lough or lake of Ireland. In the prov. of Ulster, it is bordered by the counties of Antrim, Londonderry, Tyrone, Armagh, and Down. It is the most extensive sheet of fresh water in the United Kingdom, and measures 18 m. in

length and 10 m. in breadth; its greatest depth is 102 ft. Numerous rivers feed the lake, the largest of which are the Blackwater and the Upper Bann, while the Lower Bann discharges its surplus waters into the Atlantic Ocean. There is canal communication between the lough and Belfast, Newry, and Lough Erne. *Pron.* Nay.

Neale, JOHN MASON (1818-66). Anglican divine and poet. He was born in London, Jan. 24, 1818, studied at Trinity College, Cambridge, was ordained in 1841, and in 1846 became Warden of Sackville College, an almshouse at East Grinstead, where he remained until his death. He was the founder of the S. Margaret's Sisterhood there, and a leader of the High Church movement, and was inhibited for 14 years by his bishop. Neale was one of the greatest British hymnologists, composing original hymns and translating many from the Greek and Latin. Among his translations the most popular is Jerusalem the Golden, a part of the Rhythm of Bernard of Morlaix. He published Hymns for Little Children, 1842, and Hymns for the Young, a companion volume, 1844. Neale died Aug. 6, 1866. *See* Hymns; consult also *Life*, E. A. Towle, 1907.

Neander, JOHANN AUGUST WILHELM (1789-1850). German historian. He was born at Göttingen, Jan. 17, 1789, the son of a Jew, named Mendel. On baptism he changed his name to that by which he is known (Gr., new man), and went to study divinity at Halle, under Schleiermacher, whose writings had brought about his conversion. He became professor of theology at Heidelberg, 1812, and from 1813 until his death was professor of church history at Berlin. Most of his works have been translated into English. He died July 14, 1850. *See* August Neander, O. C. Krabbe, 1852; *Erinnerungen an August Neander*, J. L. Jacobi, 1882; *Neanders Leben*, A. F. J. Wiegand, 1889.



John Mason Neale, Anglican divine



Nazareth. General view of the town in Galilee from the hills to the north-west

and the sea. Now known as En-Nasira, it is famed as the early home of Christ, and the surrounding district is remarkable for its fertility. Nazareth was occupied by the British, Sept. 20, 1918. Pop. 10,000. *See* Palestine, Conquest of.

Nazarites OR **NAZIRITES.** Word meaning separated, and applied to certain Jews. These devoted themselves to the service of God, abstained from wine and all products of the grape, allowed their hair to grow long, and avoided contact with dead bodies. Samson and John the Baptist were consecrated Nazarites from their birth; but as a rule the vow was only temporary, usually taken for a month, at the termination of which period certain sacrifices were offered, and the head was ceremonially shaved. The Law of Moses prescribed certain regulations concerning it (Num. 6).

Naze, THE. Headland on the E. coast of Essex, England, 5 m. S. of Harwich.

Neale, EDWARD VANSITTART (1810-92). British cooperator.

Born at Bath, April 2, 1810, he graduated at Oriol College, Oxford, in 1827, and was called to the bar in 1837. In 1850 he joined the Society for Promoting Working Men's Associations, and used his wealth in opening the first co-operative store in London. In 1851 he founded the Central Coopera-



E. V. Neale, British cooperator



J. A. W. Neander, German historian

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Neanderthal Man. Palaeolithic race inhabiting Europe during the Mousterian period. It was first revealed by the discovery of a human burial in a grotto of the Neanderthal ravine near Düsseldorf in 1856. Its fossil remains, representing about 30 individuals and industrial products, have since been found in widely scattered caves and summer-camp stations, including the Ghar Dalam cave, Malta, 1918. See Man; Mousterian.

Neapolis (Gr., new town). Ancient seaport in Macedonia, near the modern town of Kavala. It was here that S. Paul landed during his second missionary journey, with Silas and Timothy (Acts 16).

Neapolitan Sixth. In music, an arbitrary name of doubtful origin for a chord occurring on the subdominant of a minor key. It consists of the subdominant and its minor third and minor sixth.

It was probably arrived at through singers or string players consciously or unintentionally flattening the D to get a soft, pathetic effect. The Neapolitan sixth is also used in the major mode. See Harmony; Interval; Major; Minor; Sixth; Third.

Neap Tides. Those tides which reach the lowest high-water mark, the highest tides being called spring tides. Neap tides are those immediately following the first and third quarters of the moon, and their range is usually only one-third of the spring tides. See Tides.

Nearchus. Greek navigator. Born in Crete, he removed to Abopolis in Macedonia, where he began a lifelong friendship with Alexander, whom he accompanied on his Indian campaign, 327 B.C. Appointed commander of the fleet built by Alexander on the Hydaspes, he undertook to conduct it from the mouth of the Indus along the coast to the mouth of the Euphrates. A further journey round the African and Arabian coasts was abandoned owing to Alexander's death. Nearchus was allowed by Antigonus to retain the provinces of Lycia and Pamphylia, which had been bestowed upon him by Alexander, but nothing further is known of him. A summary of his *Paraploous* (coast-voyage) is given in Arrian's *India*.

Neasden. District of Middlesex, England, practically a suburb of London. Neasden and Kingsbury is a station on the Metropolitan Rly., which has carriage works here. The parish church is dedicated to S. Andrew and is much restored.

Neath. Mun. borough, market town, and river port of Glamorgan-shire, Wales. It stands near the

mouth of the river Neath, 8 m. from Swansea and 183 from London, and is served by the G.W. and local



Neath seal

rlys., including the Neath and Brecon, and also two canals. There is another station at Neath Abbey, 2 m. away. The buildings include the restored church of S. Thomas, the modern one of S. David, the town hall, and market house. Gwyn Hall, dating from 1888, was a gift to the town. The town lies in a profitable mining district, and the industries include copper smelting, the oldest of all, tin-plate works, steel works, chemical factories, foundries, engineering works, etc. There are good facilities for the shipping of coal and other minerals. In the 12th century an abbey and castle were founded at Neath, and there are remains of both. It became a borough about the same time and was long under the lords of Glamorgan, who allowed the citizens to hold an annual fair. Market days, Wed. and Sat. Pop. 18,900.

Neat's Foot Oil. Lubricant for fine machinery, also used in dressing leather. It is obtained from boiling the hoofs of cattle, for which neat is an old term, and has the advantage of not easily solidifying or becoming rancid.

Nebi Samwil (Hill of Samuel). Name given to the highest peak of a ridge of Palestine, $4\frac{1}{2}$ m. N.E. of Kuryet-el-Enab. It is 2,953 ft. above the sea and commands a view of Jerusalem, which lies 5 m. to the S.E. It is the supposed burial-place of the prophet Samuel, and here the Crusaders built a church on the site of his tomb, subsequently turned into a mosque. It was prominent in the British operations leading up to the capture of Jerusalem, the infantry capturing the ridge on Nov. 21, 1917. See Jerusalem, Capture of.

Nebo. God of the ancient Babylonians. The son and interpreter of Merodach, he was regarded as the writer of the first book and instructor of mankind in letters and science. There was a temple to him at Borsippa or Birs-Nimrud. See Babylonia.

Nebo OR ABARIM. Mountain in Moab. It is near the N. end of the Dead Sea. From its summit, Moses viewed the promised land before his death (Deut. 34). Its alternative name is Pisgah. The site is uncertain.

Nebraska. Tributary of the Missouri river, better known as the river Platte (*q.v.*).

Nebraska. Central state of the U.S.A. Its area is 77,500 sq. m. The surface is an elevated plain sloping from an alt. of 5,000 ft. in the W. to about 1,000 ft. in the E. Part of the N. and N.W. is occupied by "bad lands" and sand-hills. The Platte and Niobrara rivers flow through the state to the Missouri, the natural boundary on the E.; the Republican is the chief of the other streams. On account of the scanty rainfall, which does not exceed 15 ins. annually on the W., only the Missouri is navigable.

Agriculture has been developed by a state scheme of irrigation, and large crops of maize, wheat, oats, and potatoes are obtained. Stock-raising is a flourishing industry, but minerals are of little importance; slaughtering and meat-packing are largely carried on. Higher education is provided by a state university and other institutions, and transport facilities by 6,400 m. of rlys. Two senators and six representatives are sent to Congress. Lincoln is the capital, but Omaha is the most populous centre. Nebraska was admitted to the Union in 1867. Pop. 1,296,000.

Nebraska. City of Nebraska, U.S.A., the co. seat of Otoe co. On the Missouri river, 53 m. S. of Omaha, it is served by the Missouri Pacific and the Chicago, Burlington and Quincy rlys. The industrial establishments include fruit canneries, flour and lumber mills, foundries, starch, vinegar, and cigar factories, stockyards, and grain elevators. Nebraska City, which occupies the site of old Fort Kearney, became a city in 1871. In 1921 it was proposed to erect a new capitol building in flat prairie country, at a cost of about £1,000,000. Pop. 6,300.

Nebuchadrezzar OR NEBUCHADNEZZAR. Name of three kings of Babylon. The most famous, Nebuchadrezzar II, son of Nabopolassar, reigned 604-561 B.C., invaded Judah thrice, taking Jerusalem and carrying many Jews into captivity, 586; captured Tyre, after a siege of 12 years, and invaded Egypt. He restored many temples and rebuilt Babylon, where Koldewey's excavations, 1899-1911, revealed his palace, temples, gates, walls, quays, and canals. The spelling Nebuchadrezzar is that used in the A.V., but Nebuchadrezzar is preferred by modern authorities. See Babylon, col. plate; Borsippa; Carchemish; Daniel; Ziggurat.

Nebula. In astronomy, a celestial object which cannot be resolved by the telescope into a star, or group of stars, as distinct from comets. Nebulae were first cata-

logued by Messier in 1771, to enable him to distinguish them from possible new comets. Afterwards the Herschels catalogued 5,000 of them, but so many of the so-called nebulae were resolved into star clusters by the greater telescopes that it was believed all nebulae were assemblages of very distant stars.

Spectroscopy disproved this assumption in the year of the publication of the Herschels' catalogue, when Huggins showed, in 1864, that the Draco nebula was a mass of incandescent gases which appeared to him to be hydrogen and nitrogen. By 1868 he had examined the spectra of about 70 nebulae, of which a third displayed a gaseous character. Since then opinion has oscillated, and the application of the spectroscopy to nebulae, by revealing many differences in the character of their spectra, has evoked the speculation that some of them which have a doubtfully gaseous character may in fact be groups of stars outside the stellar universe—external universes. All the known nebulae are too far away to enable any estimate to be made of their distance, a circumstance which has favoured the foregoing speculation. The belief that all the nebulae are comprised within the boundaries of the Milky Way is founded on three considerations. The first is on the nature of nebulae as disclosed by the spectroscopy; the second upon their associations with neighbouring stars; the third on their systematic arrangement as compared with the systematic arrangement of the stars.

The nebulae show many gradations, from formless masses of gas many hundreds of millions of miles in linear dimension, to what are called planetary nebulae, and to the nebulae (or nebulosity) surrounding stars, as in the familiar example of the Pleiades. There are irregular nebulae, ring nebulae, and elliptical nebulae, spiral nebulae, and planetary nebulae. Their names suggest their variety of shapes—the ring nebulae in Lyra, the crab, the well-known dumb-bell nebula in Vulpecula, the key-hole, the fish-mouth, the spider, and the whirlpool in Canes Venatici. Planetary nebulae have generally

a star as a nucleus, and one such nebula has a spiral form. Almost every kind of nebula suggests at some stage of development an evolution passing through the stages of a mass of gas, a whirlpool motion, a spiral, to a condensation into a planetary or solar system.

Some hundreds of thousands of nebulae have been discovered, and they may be grouped into two great classes, elliptical (to which spirals belong) and irregular nebulae. The irregular nebulae are unmistakably gaseous; and most gaseous nebulae are distinguished by a blue or greenish tinge. Investigation has pro-



Nebula. Top, right, spiral nebula in Ursa Major, from a telescopic photograph by G. W. Ritchey; below, the great irregular nebula in Orion, from a photograph taken at the Lick Observatory

ceeded in recent years through the aid of photography; and this progress began with the remarkable photographs which were made by J. E. Keeler at the Lick Observatory, from 1898 to 1900. Keeler's photographs led him to the opinion that half the nebulae of the sky were spiral in form. Of these spirals the greatest is the Andromeda nebula, as the nebula in Orion is the greatest of the irregular nebulae.

In Jan., 1921, Dr. V. M. Slipher, of the Lowell Observatory, at Flagstaff, Arizona, announced as

the result of his spectrographic observations there, that the nebula Dreyer, No. 584, in the constellation of Cetus, was dashing through space away from the earth at a velocity of 1,240 m. a second, the highest speed ever attained by a celestial object. See Andromeda; Astronomy; Milky Way; Stars.

Nebular Hypothesis. In astronomy, a theory to account for the origin of the planetary system. First suggested by Immanuel Kant, in 1755, and placed on a more definite basis by Laplace, the latter supposed that the matter which now forms the sun, planets, and satellites, existed once in the state of gas, and that this gaseous mass formed a vast globe which extended from the sun's present position as a centre out to, or beyond, the orbit of Neptune, and that this gaseous mass was rotating. As it rotated it gradually flattened, its particles consolidated, and its speed of rotation increased.

Under the action of increasing speed of rotation and flattening, some of the gaseous matter would be detached from the present mass in the form of a ring. This ring would break up into separate globular masses which would ultimately coalesce in the largest of them and thus form the first, and outermost, planet, and so for other planets. See Planet.

Nebulé. In heraldry, a line of division, or outline of a charge, forming a series of rounded projections, pointing alternately to each side, to represent clouds.



Nebulé in heraldry

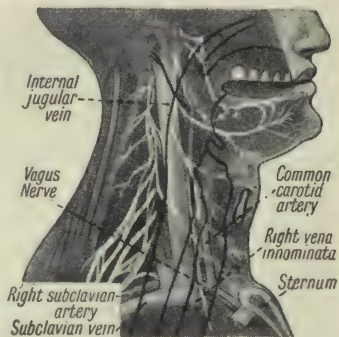
Nebulium.

Gas, unknown on the earth, but which has been discovered spectroscopically in nebulae. It is the characteristic sign of all gaseous nebulae which glow with a greenish light and show in the spectroscope two bright green lines. The gas has also been discovered in certain new stars, and it is often associated with hydrogen and helium.

Necessity. Constraint or compulsion regarded as a law which makes anything what it is and excludes its being anything else. Logical necessity is the impossibility of conceiving a thing different from what, according to the laws of thought, we conceive it to be; here belongs the principle of identity, $A=A$. Physical necessity is the certainty that a particular cause in similar conditions will always be followed by a particular effect. See Determinism; Kant.

Necho or **NECOH.** King of Egypt (610-594 B.C.). The Egyptian Nekau, he succeeded his father Psammetichus I, founder of the XXVIth dynasty. The Assyrian power having fallen, he reconquered Syria, defeating and slaying Josiah of Judah at Megiddo, 609 B.C. He reached the Euphrates and on his return march deposed Jehoahaz, son of Josiah, replaced him by his brother Eliakim whom he called Jehoiakim, and exacted a heavy tribute from Judah. Nabopolassar, king of Babylon, sent his son Nebuchadrezzar to Syria, with the result that Necho was defeated at Carchemish 605 B.C. and lost the whole of his conquests in Syria and Palestine (2 Kings 23; 2 Chron. 35, 36; Jer. 46). Phœnician seamen sent by Necho are said to have circumnavigated Africa. See Egypt.

Neck. Part of the body which unites the head with the trunk. The neck supports the head by means of the cervical vertebrae. In front of the bony pillar lies the oesophagus, terminating above in the pharynx, and in front of these are the trachea and larynx. The thyroid gland is situated in the lower part of the neck, a lobe being on each side of the trachea with an isthmus connecting them across the middle line. The carotid arteries pass up from the thorax to the head at the side of the neck, and



Neck. Sectional view from the side, showing principal veins and nerves

can be felt pulsating close to the anterior margin of the sternomastoid muscle. The jugular veins pass downwards close to the carotid arteries. Close to these structures are the vagus and other nerves passing between the head and the trunk.

The most prominent muscles of the neck are the sterno-cleido-mastoids, one on each side, which run from the breast-bone and inner end of the collar-bone to the mastoid process, a bony prominence just behind the ear; and the trapezii, which pass up from the back and are inserted into the occipital bone at the lower part of the back of the head. See Anatomy; Fibrositis; Hanging; Man; Strangulation; Trachea.

Neckar. River of S. Germany, a tributary of the Rhine on the right bank. Rising near the Danube, between the Black Forest and the Swabian Jura, it flows N.E. and N. through Württemberg and Baden, turning W. at Eberbach to join the Rhine at Mannheim. Its length is about 250 m., and its chief tributaries on the right bank are the Fils, Rems, Kocher, and Jagst, and on the left the Ens. The chief towns on the Neckar are Tübingen, Cannstatt (a suburb of Stuttgart), Heilbronn, Heidelberg, and Mannheim. Though very rapid, the river is navigable for small vessels as far as Cannstatt. See Mannheim.

Necker, JACQUES (1732-1804). French financier and statesman. Born at Geneva,



Jacques Necker, French financier

of Pomeranian extraction, Sept. 30, 1732, he entered the Vernet Bank at Paris about 1747, and in 1762 founded a successful bank of his own. Director of the treasury, 1776, he was

made director-general of finance in 1777. He published his *Compte Rendu*, 1781, and then retired, his treatise on French financial administration following in 1784. Exiled from Paris, 1787, he was recalled as director-general in 1788, and was responsible for summoning the states-general and doubling the representation of the third estate. Dismissed on July 11, 1789, he was recalled a few days after the fall of the Bastille. He held office until Sept., 1790, when he retired to Coppet, Switzerland, where he died on April 9, 1804. See *Vie privée de M. Necker*, Madame de Staël, 1804.

Necker, SUZANNE CURCHOD (1739-94). French writer. Born at



Suzanne Necker, French writer

Crassier, canton of Vaud, Switzerland, daughter of a Protestant pastor, she was for some time in love with Edward Gibbon before marrying Jacques Necker in 1764. Her salon was one of the most celebrated in Paris, frequented by such men as Diderot, Buffon, André Morellet, and Marmontel. Famed also for her charities, she founded, 1778, and for some years administered, the Hôpital Necker in Paris. She died at Coppet, Switzerland, in May, 1794. Her daughter, Anne Louise Germaine, became Madame de Staël (*q.v.*). See *Le Salon de Mme. Necker*, G. d'Haussonville, Eng. trans. 1882.

Necklace. Ornament for the neck worn by most races from the remotest times. They are usually collars of metal in the form of solid rings, gorgets, open work or filigree, textiles, or of chains, often ornamented with pendants and decorated with enamels, glass, and precious stones. The torque, worn by prominent men among the Gauls, Persians, and other ancient nations, was a rigid necklace or collar of spirally twisted gold. See Anglo-Saxon Antiquities; Assyria; Celt, colour plate; Jewelry.

Necromancy (Greek, *nekros*, corpse; *manteia*, divination). Divination by pretended communication with the dead. The art is usually exercised by professional sorcerers, as in the familiar example of the witch of Endor, in 1 Sam. 28, who professed to evoke the spirit of the prophet Samuel at the behest of Saul. In Homer's *Odyssey*, bk. 11, the conversation of Ulysses with Tiresias in Hades differs from regular necromancy in

that the shade of the departed seer was not brought back to earth. When Cortes invaded Mexico it is recorded that the spirit of Monte-

Necrosis. In pathology, the death of a limited portion of tissue. Most commonly the destruction of periosteum, or covering of the bone through which the blood-vessels enter, causes necrosis of the bone. Generally necrosis is caused by failure of nutrition of any tissues. See Gangrene.

Nectar. In Greek mythology, the drink of the gods, their food being ambrosia. It was supposed to confer immortality on those who drank it, and on that account was forbidden to mortals.



Nectarine. Branch with foliage and ripe fruit

stitching wounds are curved, upholstering needles are double-pointed, sack needles have a square section, etc. See Bone Implements.

Needle-Gun. First successful breech-loading rifle for military use. The weapon was invented



Needle: Ancient and modern examples. 1. Prehistoric bone needles, from cave near Bruniquet, France. 2. Roman. 3. Roman netting needle. 4. Modern carpet needle. 5. Darning needle. 6. Plain sewing needles. 7. Crewel embroidery needle. 8. Packing needle

2 and 3, British Museum

zuma's sister Papantzin was evoked, and foretold the downfall of the Aztec empire.

Necromancy still prevails widely in primitive culture. The Zulu witch-doctor causes the voice of his *amatongo* to be heard by means of ventriloquism; in W. Africa the Ewe medicine-man in cases of sickness elicits the future course of the disease by consulting his *tro*; the Melanesian *indalo*, or ghost, is evoked for advice such as whether a proposed canoe voyage may be safely undertaken. In most instances offerings are made to the spirits to secure their goodwill, and their aid in attaining the desired result.

In medieval Europe the word was corrupted to nigromancy, as if from Lat. *niger*, black, and in that form came to denote the black art, or witchcraft in general. See Divination; Magic; consult also Lives of Necromancers, W. Godwin, 1834.

Necropolis (Gr. *nekros*, corpse; *polis*, city). Word meaning a city of the dead. It was anciently applied to an outlying part of Alexandria which was set apart for burial purposes, and is used in connexion with modern cemeteries, such as those at Woking in Surrey, England, and at Glasgow, Scotland. The company owning the burial ground at Woking (*q.v.*) is called the Necropolis Company.

Necropsy. In medicine, name given to the examination of the body after death. See Autopsy; Post Mortem.

Nectarine. Edible fruit, a smooth-skinned variety of the peach (*q.v.*). The method of cultivation and habit of both nectarine and peach are generally identical, but the fruit of the nectarine is more tender of skin than the peach, and therefore must not be touched by hand during development, or the ripened fruit will be bruised and spoiled.

Nedenes. Former name of the Norwegian county now known as Aust-Agder (*q.v.*).

Nederland Line. Dutch steamship company. Running the principal transport services between Holland and the Dutch East Indian colonies, there are fortnightly sailings from Amsterdam and Southampton to Singapore, Java, and other East Indian ports.

Needle. Instrument used for carrying a thread in sewing or similar operations, consisting of a thin, pointed rod of steel, bone, or other material. Sewing-machine needles have an eye at the point; other sewing needles have an eye at the opposite end. Sewing needles are defined according to their construction, use, or function, as drill-eyed, golden-eyed, sharp, blunt, carpet needle, etc. The word is also used for a thin, straight rod of bone, wood, or metal used in knitting; for a light, hooked rod used in crochet; and for a thin, flat piece of metal, or a light metal rod pivoted at a point along its length, as in a magnetic compass, telegraphic instruments, and apparatus for measuring electric currents. Surgeons' needles for

by a Thuringian mechanic, Johann Nikolaus Dreyse, in 1839, and quantities were being manufactured by 1841, as the rifle was adopted by the Prussian army.

The needle-gun was a great advance on any rifle in use at the time, and the increased rate of fire which its breech-loading made possible was of much value to the Prussians in several wars. It was of 16 bore and had a simple bolt action provided with locking lugs, and inside the bolt the spring loaded needle from which the gun took its name. It was superseded by the Mauser in 1872. See Rifle.

Needlemakers' Company, THE. London city livery company. Existing in the time of Henry VIII,

its first charter was granted Nov. 10, 1656, this being superseded by one dated Feb. 9, 1664. The office is at 3, Crooked Lane, E.C. See An Account of the Needle-makers, J. E. Price, 1876.

Needles, THE. Group of three insulated chalk rocks off the W. end of the Isle of Wight. The westernmost rock is surmounted by the Needles Lighthouse, 109 ft. high, with occulting light. Before 1820 the rocks were joined together and connected with the island. The Needles take their name from a slender pillar of chalk which fell in 1764.



Needlemakers' Company arms

Needlework. Specifically, work done with a needle. The art of the needle is one of the oldest of the crafts, and has developed in delicacy and fineness with the fabrics submitted to the needle. Great skill in design and execution was shown by the Egyptians, and indeed under all the Mediterranean civilizations, at an early age.

The stitches used in needlework are practically the same all the world over, but the designs are very different. Oriental stitchery is perhaps the finest of all, and the designs are those of the artist with the brush; the weaver and the embroiderer worked together, and in some cases the embroidery is actually done on the warp. The art has developed in the East on religious lines, so that characteristic designs have persisted through the centuries.

In Europe, Byzantine design was grafted on the Greek and Christian needlework of the Mediterranean, and much of this design is still followed in the peasant needlework of the European countries east of the Danube. The West was strongly influenced by Italian design, itself indebted to Saracen art, and much of the beautiful work executed in England during the 17th century, called Jacobean, is hardly distinguishable from contemporary Italian work.

Since about 1890 there has been a considerable revival of needlecraft, encouraged by the establishment of the royal school of art needlework at South Kensington. Plain needlework is an obligatory subject in elementary schools for girls. See Dressmaking; Embroidery; consult also Dictionary of Needlework, S. F. A. Caulfield and B. C. Saward, 2nd ed. 1896; Art in Needlework, L. F. Day and M. Buckle, 3rd. ed. 1907.

Needwood. Forest in Staffordshire, England. A royal hunting ground, it lay between Stafford, Burton, and Lichfield, and is estimated to have covered about 70,000 acres. It was largely stocked with deer and wild cattle, and was divided into five wards, Barton, Marchington, Uttoxeter, Yoxall, and Tutbury. Its area was reduced greatly in the 17th century, and in 1801 the rest was disafforested. Most of it is now under cultivation, but a little still remains forest. The name is still used for the district, and much of the land belongs to the duchy of Lancaster.

Negapatam. Port of Madras, India, in the delta of the river Cauvery. One of the earliest settlements of the Portuguese, it was captured by the Dutch in 1660,

and has been British since 1781. It is the port for steamers for Rangoon and the Straits Settlements, and for this reason a port of embarkation for Madras coolie emigrants. Here are rly. workshops. Pop. 60,200.

Negative. In photography, the record of an object on a sensitive plate or film, produced by the action of light, and representing light as dark and vice versa, since the effect of light, followed by development, is to produce a dark deposit.

A negative lens is one which causes parallel rays of light to diverge, or convergent rays to be less convergent. Added to a positive lens, a negative thus increases the focal length, producing a larger image. See Lens; Photography.

Negligence. In law, the want of reasonable care or diligence in the performance of a duty. In order to found an action for damages for negligence, the plaintiff must show that the defendant owed some duty not to be negligent, and that, in consequence of his breach of that duty, actual damage has resulted to the plaintiff or his property.

The duty may be a contractual one, as where a solicitor is negligent in the conduct of an action for a client; or it may be a duty which the defendant owes to all the world, as where an action is brought in respect of personal injuries caused by the negligent driving of the driver of a vehicle in the street. How important the question of duty is may be seen from a simple illustration. A digs a hole in his private field, and leaves it unfenced and unguarded. B, wandering in the night, falls into the hole. A is under no responsibility, because he owes no duty to anyone not to leave unfenced holes in his field. On the other hand, if A digs a hole in his own unfenced land by the road side, he owes a duty to all wayfarers to keep it fenced, or to warn the public of the hole's existence.

In certain cases, want of skill is negligence. This happens when a man professes to possess skill, and either does not possess it or does not use it; e.g. a medical practitioner is negligent, if he fails to treat a patient with ordinary skill and knowledge. Error of judgement is not negligence. A barrister is not liable for negligence in giving advice or in the conduct of a case. If a man, confronted by a sudden danger, loses his presence of mind, and takes the wrong step, it is not negligence.

An action for negligence will lie against a person who takes or brings on his land a thing in itself dangerous, if that thing does harm, although the defendant has taken every precaution that science or reason can devise.

Negoi. Highest mt. in Transylvania, Rumania. Its alt. is 8,320 ft. It is a peak in the Fagaras Mts., a central section of the Transylvanian Alps, and rises E. of the Rotenturm Pass between Transylvania and Rumania proper.

Negombo. Coast town of Ceylon. It is on the W. coast 23 m. N. of Colombo, with which it is connected by the coast rly. It stands in a fertile area planted with coconut palms. There is a fishing industry, and a trade in cinnamon. Pop. 13,000.

Negotiable Instrument. In English law, a document by delivery of which the legal right to the property which it secures may be conveyed. The distinction is between negotiability and assignability. All contracts, except for personal services and the like, and all property, can be assigned or transferred, but the person who receives them takes no better title than the assignor had; and, further, takes subject to equities and rights as between the transferor and the debtor.

If A draws a bill of exchange, which is a negotiable instrument, in favour of B, and B negotiates it to C, C can sue A for the full amount of the bill, without regard to any claim which A may have against B. Again, if a negotiable instrument is lost or stolen, and is negotiated to A, who takes it in good faith and for value, A has a good title to it. Instruments are negotiable by the custom of merchants, and any instrument may be made negotiable by universal usage. Bills of exchange, promissory notes, and cheques are the most usual negotiable instruments; but bonds to bearer, dividend coupons, bills of lading, dock warrants, wharfingers' certificates, have by statute and custom acquired most of the incidents of negotiability. See Bill of Exchange.

Negotin. Town of Yugo-Slavia, in N.E. Serbia. It lies near the Danube, which here is the boundary between Serbia and Bulgaria, about 20 m. S. of Orsova, and 110 m. E.S.E. of Belgrade, with which it has railway connexions. In 1915 it was a flourishing town, but in Oct. of that year it was greatly damaged when the Bulgars invaded E. Serbia. The town was occupied by the Bulgars till the end of Sept., 1918, and was then

held by the Austro-Germans, who were driven out by the Allies in the following Oct. Pop. 7,000.

Negretti, ENRICO ANGELO LUDOVICO (1817-79). Anglo-Italian optician. A native of Como, he settled in London in 1829, became a glass-blower, and began business as a maker of thermometers in 1843. With his partner, Joseph Warren Zambra, he gained a high reputation for optical and scientific instruments at the great exhibition of 1851, thus founding a business which acquired world-wide celebrity. An ardent Italian patriot, Negretti helped the many refugees in England, and extended hospitality to Garibaldi both in his dark days and during the time of his prosperity. He was naturalised in 1862, and died at Cricklewood, Sept. 24, 1879.

Negri, ADA (b. 1870). Italian poet. She was born in humble circumstances at Lodi, Lombardy, Feb. 3, 1870, and having become a teacher, won immediate fame by the publication of a volume of poems, *Fatalità*, 1893. After its publication she taught in the normal school at Milan, and was married to a manufacturer named Garlanda. Other volumes of her poems were *Tempeste*, 1896, and *Maternità*, 1904. In 1917 she published her first volume of prose, *Le Solitarie*, a collection of short stories of the loneliness of women. See Ada Negri, Carl Henckell, 1896; and La Poésie Italienne Contemporaine, J. Dornis, 1898.

Négrier, FRANÇOIS OSCAR DE (1839-1913). French soldier. Born at Belfort, Oct. 2, 1839, he entered the military college of St. Cyr in 1856, and was gazetted lieutenant in 1863. In the Franco-Prussian War he served in the army of Metz. He made his escape and joined *Faidherbe* in the government of national defence. After the war he served in Algiers, and in 1879 became colonel of the foreign legion, which he led in the Oran campaign of 1880. In 1883 he became general, distinguishing himself in many actions of the Tongking campaign, 1884-85. Promoted general of division, in 1894 he was inspector of the army, retiring in 1904. He died Aug. 22, 1913.

Negrito (Span., little negro). Term denoting diminutive peoples of the black race in S.E. Asia and the equatorial African negrillos. They comprise the pygmy peoples, whose average adult male stature falls below the conventional maximum of 4 ft. 11 ins.

Once widespread in tropical Asia, the negro stock survives in four well-marked types: the Aeta of the Philippine islands, who are

the most numerous; the Andamanese of the Bay of Bengal; the Semang of the Malay peninsula; and the Tapiro, discovered in 1910 in Dutch New Guinea. Numbering about 25,000 in all, they are dark-skinned, long-armed, with medium or roundish heads, broad noses, prominent eyes, prognathous jaws, and short, woolly, or frizzy hair. They employ snares and arrows. Their dress, ornaments, dwellings, social organization, and animism are on the simplest levels.

These physical and cultural characters are traceable in Melanesian and other stocks, such as the Mafulu people of Papua. They appear to point to an age when tropical Asia was in the general occupation of a pygmy negro stock, before the advent of the primitive wavy-haired, Caucasoid population. Of this pre-Dravidian immigration some surviving elements, such as the Sakai, Toala, and Vedda, approximate in some respects to the negro culture.

In tropical Africa the negrillos, whose usual designation in English is the Congo pygmies, include the Akka, Bambute, Batwa, and

Wochua of Belgian Congo; the Babongo of French Equatorial Africa; and a tribe on the Wute plain in Cameroons, discovered in 1913. The negrillo group is distinguishable from the Asiatic negroes by a shorter average stature, falling to 4 ft. 4 ins., thinner lips, and a browner, even yellower, skin. They share with them a tendency to round-headedness, jungle nomadism, the use of poisoned arrows and snares, and the simplest elements of culture and animistic belief. A racial relationship with the Bushmen is no longer held. Some communities which have been enslaved by taller Bantu-speaking negroids are already, after two generations of settled husbandry, modifying their pygmy traits.

The view now prevails that both negro and negrillo are branches of a single tropical stock of Asiatic origin, rather than a parent stem from which the tall, long-headed negro emerged. See Akka; Andamanese; Dwarf; Negro; consult also *The Pygmies*, A. de Quatrefages, Eng. trans. 1895; *Pygmies and Papuans*, A. F. R. Wollaston, 1912; *Man Past and Present*, A. H. Keane, rev. ed. 1920.

THE NEGRO AND HIS CHARACTERISTICS

N. W. Thomas, late Government Anthropologist, S. Nigeria

In connexion with this article the reader may be referred to the articles Africa; Anthropology; Ethnology; Slavery; Slave Trade. See also Bantu; Fula; Nilotic; and other races; also Benin; Nigeria; Sudan, and other areas in which negroes live; Magic, etc.

Negro (Lat. *niger*, black) is the name of the dark-skinned, woolly-haired races who inhabit W. Africa S. of the Sahara, and, farther E., the region S. of a line reaching the Indian Ocean near the river Tana.

Though we learn of Negro Africa from Egyptian records and classical writers, its story is in the main a closed book, apart from histories of medieval Sudanese empires. The distribution of African languages makes it clear that great migrations have taken place, but our analysis of African culture and our knowledge of the languages are not yet sufficiently advanced for us profitably to speculate as to the source of the various elements.

The negro is allied, zoologically, to the negroid, e.g. Melanesians, to the pygmy, and to the negrito, e.g. Semang and Aeta; except as regards hair, he comes nearer to the anthropoids than do the white races. He is usually long-headed, of moderate stature, long-legged and long-armed, with a complexion varying from yellow-brown through red-brown to a blackish-brown.

Negro languages fall into many groups, some almost monosyllabic

and isolating, others indicating the relation of words in a sentence by prefixes, as do the Bantu languages, others by suffixes. Especially in the monosyllabic languages, musical tones, resembling those of Chinese, play an important part. There are probably over 1,000 negro and 400 Bantu languages.

The religion of the negro is ancestor worship in the E. and S., ancestor worship combined with a cult of a sky god, nature spirits, deified men, or demi-gods of ill-defined origin in other areas; the priest plays, as a rule, little part in it. In some tribes there appears to be a belief in a god who represents the general body of ancestors conceived of as an undifferentiated mass. On the W. coast ancestor worship has been overlaid, but not materially modified, by a belief in reincarnation, probably of Egyptian origin. Sacrifices to dead ancestors are a most important ceremony; offerings are also made at irregular intervals to evil spirits. In a few places gods are believed to dwell in the bodies of animals.

Side by side with religious beliefs is a strong magical element; the witch is a criminal and hunted

out, especially in S. Africa, by the witch doctor; the magician is in some tribes magnified into a divine king, who controls the course of nature and is subject to many ritual regulations on account of his holiness. Secret societies have usually a strong religious element. Initiation societies, on the other hand, are often concerned only with circumcision and similar rites. Some secret societies form a kind of chief's council.

As regards social organization, large areas may be governed by tribal chiefs; in other cases the chief's authority is limited to a single town, or even a quarter of a town. But on the Congo, the lower and middle Niger, in Dahomey, etc., powerful empires and kingdoms arose and flourished. African societies are in the main democratic, without well marked distinctions of rank, except in so far as slavery is practised.

The negro is free to marry as many wives as he can purchase; in some areas male births exceed female by 50 p.c., and, although the mortality among males is heavier, plurality of wives means, now that war and slavery have ceased to keep down the male population, that some 15 p.c. of marriageable males have no wife. Two kinds of marriage are found; in one the woman remains free, and her children are members of her family, not of her husband's, whom she is free to leave at will; in the other the woman is the property of her husband, her children are his heirs, and at his death she is inherited along with the rest of his property. When descent is reckoned through the mother, her brother has frequently the chief authority, and his property goes to his sister's children. When the descent is in the male line, the sons or brothers of the dead man are his heirs.

Means of Livelihood

Land is, as a rule, common property; farm land is divided up each year, and after one or two crops have been taken, lies fallow for eight or ten years. Though the Herero are pastoral and others, like the Wahuma and Fula, mainly so, while some riverine tribes live mainly on fish and on vegetable products gained by barter with agricultural tribes, in the normal tribe every man is a farmer. The crops vary with the tribe; in Uganda the banana is most important; other Eastern tribes live mainly on cereals, millet, and maize; on the Congo manioc and yams are food of primary importance; the staple of the Sierra Leone tribes is rice; fish are an

important food near the rivers, but in S.E. Africa no use is made of them. Meat is not largely eaten; the domestic animals are the goat, fowl, sheep, and in some areas cattle and pigs, together with the dog, a favourite dish.

The hut of the negro may be of beehive shape, or with a conical, gabled, or flat roof; pile dwellings are also found. Towns vary in size from cities like Ibadan with 200,000 inhabitants to the villages characteristic of Sierra Leone with only a few score huts. In war the spear and bow were the usual offensive weapons, with various types of shield; throwing-knives were used in the Congo area; in some tribes a war chief took command of the soldiers.

Musical Instruments

The musical instruments of the negro include the drum, also used for sending messages, the flute, the marimba or xylophone, the sansa, made of wooden or metal strips mounted on a block and twanged, and stringed instruments from the one-stringed bow upwards. In some parts each tribe has a well-defined type of melody. No negro language has written characters; syllabic writing was invented by the Vai and later by the Bamum, but their systems are due to imitation of Europeans.

N. W. Thomas

THE NEGRO IN AMERICA. The modern expansion of the negro race is almost entirely due to its exploitation for slave labour, the effects of which are most important in the New World. The distribution of American negroes is mainly determined by the cotton, sugar, and rice plantations. The negro is employed for heavy field work in hot, moist climates. Elsewhere he is chiefly found in the large cities as an unskilled labourer or domestic servant. Traces of African customs are few, though ancestral influences account for a widespread belief in witchcraft (Obeah), and for the occasional practice of the savage rites of Voodoo.

The negro population of the New World is between 20 and 30 millions, of which about 10,500,000 are in the U.S.A., where they form about a tenth of the population. In some districts they form 90 per cent. or more of the population, but only in two states, Mississippi and S. Carolina, do they form a majority, after which they are relatively most numerous in Georgia, Louisiana, Alabama, Florida, Virginia, N. Carolina, and Arkansas.

The negro problem in the U.S.A. became acute after the emancipation of the slaves. For a time the negro vote controlled most of the

south, and much corruption and misgovernment followed. A Democratic reaction followed, and special legislation — educational tests, poll-tax, etc. — in some states practically disfranchised the negro. In the south the segregation of the negro in public conveyances, schools, places of amusement, and churches is enforced, and intermarriage prohibited. In many districts tension is acute, and results in frequent outbreaks of rioting, lynchings, etc. Hybrids are treated as negroes, of whom they are said to form about a fourth or fifth, and supply most of the leaders.

Statistics of crime show a percentage four times as great as that of the whites. The negro's lack of self-restraint, thrift, and perseverance, and his tendency to larceny and sexual laxity are part of the heritage of slavery. The early attempts to solve the problem by repatriation having failed, effort is now concentrated on education. Illiteracy is being steadily reduced, and a majority of children now attend school. Higher education now aims at technical efficiency and character-building. The number of negro farmers is growing, and savings are accumulating.

West Indies and South America

With the exception of Cuba and Porto Rico, the West Indies have an overwhelming preponderance of negro inhabitants. In Barbados the negro is seen at his best, and is progressing steadily. In Haiti the results of emancipation from white control are not encouraging. In S. America, Brazil and Guiana have the largest negro admixture, followed by Venezuela and Colombia. There is no acute colour question, the negroes having crossed extensively with the whites. The negroes of Brazil are relatively strongest in the provs. of Maranhão, Minas Geraes, and S. Paulo. Unlike the negroes of N. America, who are of Mandingo and allied stocks, those of Brazil are to a great extent Bantu, their ancestors having been brought from Angola.

A. B. Gough

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Negro, Rio. River of S. America, the largest left bank tributary of the Amazon. It rises in Colombia by many headstreams, the chief of which, the Guainia, forms part of the boundary of Venezuela. Flowing generally E.S.E., it unites with the Amazon in Brazil, below Manaos. In parts from 9 m. to 15 m. in width, it is barely $1\frac{1}{2}$ miles wide at its mouth. It contains many islands, and through the Cassiquiare communicates with the Orinoco. Its principal affluents are the Aribaha, Parima or Rio Branco, Uaupés, and Padauri. Total length about 1,400 m., most of which is navigable.

Negro, Rio. River of Argentina, on the border of Patagonia. Two Andine streams, the Neuquén and Limay, join to form the main stream, which flows thence 400 m. to the Atlantic Ocean. Rapid and obstructed by shoals and islands, it is of little use for navigation. In its middle course it is followed by the rly. from Neuquén to Bahía Blanca. Its total length is 650 m.

Negropont. Variant name for the Greek island of Euboea (*q.v.*).

Negro Powder. Safety explosive for use in coal mines. It consists of 57 p.c. ammonium nitrate, 15 p.c. trinitrotoluene, 27.5 p.c. sodium chloride, and 0.5 p.c. graphite, the maximum permissible charge being 24 oz. *See Explosives; Safety Explosives.*

Negros. Island of the Philippines. One of the Visayan group, lying between Cebu and Panay, it is 135 m. long, has a mean breadth of 27 m., and covers an area of 4,880 sq. m. It is traversed throughout its length by a well-wooded mountain ridge, which contains the active volcano Canlaón or Malaspina, 8,193 ft. high. Sugar, copra, hemp, tobacco, and rice are largely cultivated, and teak and other timbers are obtained. Although the coast has few secure anchorages, fishing is an active industry. Bacólod, on the N.W. coast, and Dumaguete, on the S.E. coast, are the principal towns. Pop. 462,000.

Negus. Title of the emperor of Abyssinia, the full form of which is *negus negusti* (king of kings).

Negus. Warm beverage made of port wine and water, sweetened with sugar and flavoured with lemon, cloves, nutmeg, etc. The water, in the proportion of one-half to two-thirds, should first boil, and sherry may be substituted for port. A small addition of brandy is recommended when the negus is to be drunk cold. It is named after its inventor, Col. Negus, master of the buckhounds, 1727.

Nehemiah. Reputed author of an O.T. book, closely related to the books of Ezra and Chronicles. It records the work in Jerusalem of a Jewish cupbearer of Artaxerxes, who in 444 B.C. was appointed Persian governor of Judah. Nehemiah made two visits to Jerusalem, 445 and 432 B.C., during which he inspected the rebuilding of the walls and introduced various social and religious reforms. The Book of the Law of Moses was read to the people, and they were called upon strictly to observe its regulations. *See Bible; Ezra.*

Neilson, JAMES BEAUMONT (1792-1865). British inventor. Born June 22, 1792, and employed at a colliery while a boy, he became a foreman and manager of the first Glasgow gasworks. He suggested the use of clay retorts in gas manufacture, sulphate of iron for its purification, and the swallow-tail burner. As a result of studies carried on in his spare time at the Andersonian University, he introduced the hot-blast in iron manufacture, for which he took out a patent in 1828. The process was revolutionary, three times as much iron being obtained for the same expenditure of fuel as by former processes, and in partnership with Charles Macintosh (*q.v.*) Neilson made it a commercial success. He died Jan. 18, 1865.

Neilson, JULIA (b. 1869). British actress. Born in London, June 12, 1869, she was educated at Wiesbaden. After winning many prizes at the R.A.M., she abandoned music for the stage, and made her début as Cynisca in *Pygmalion* and *Galatea*, at the Lyceum, London, March 21, 1888. At the Haymarket, 1889-94, she achieved success as Julie de Noirville in *A Man's Shadow*; Pauline in *Called Back*; Olga in *The Red Lamp*; Drusilla Ives in *The Dancing Girl*; and Hypatia in the play of that name. Her other successes include Nell Gwyn in *Sweet Nell of Old Drury*; Lady Blakeney in *The Scarlet Pimpernel*; and several Shakespearean parts, among them *Rosalind in As You Like It*. She visited the U.S.A. in 1895 and 1910. She married the actor-manager Fred Terry (*q.v.*).

Neilston. Town of Renfrewshire, Scotland. It stands on the Levern, 10 m. from Glasgow, and is served by the Cal. Rly. The

chief industries are the spinning of cotton and the printing and bleaching of cotton goods. Pop. 15,000.

Neisse. River of Germany, in Upper Silesia. It rises on the border of Czecho-Slovakia and flows N. between the Giant Mts. and the Sudetes, then E. and N.E. to join the Oder after a course of 120 m. *Pron. Nicer.*

Neisse. Town of Germany, in Upper Silesia. It is a rly. junction, 30 m. S.W. of Oppeln, and manufactures lace, furniture, and machinery. The parish church of S. James, completed in 1430, the Renaissance church of SS. Peter and Paul, and the 15th century town hall are notable. Neisse was formerly the capital of the principality of Neisse within the administration of the bishop of Breslau. Pop. 26,000.

Neith. Egyptian goddess. A primitive hunting deity of the Libyan population of the W. delta, worshipped at Sais in predynastic times, she was portrayed with crossed arrows and other hunting emblems, and identified with the Greek Athena. She was afterwards represented with green hands and face as an earth-mother, and at Esneh in Upper Egypt was linked with Khnum. Her cult regained prominence under the Saite kings of the XXVth dynasty. *See Egypt.*

Neiva. Town of Colombia, S. America, in the dept. of Huila. It stands on the Magdalena river, at the head of navigation for light craft, 116 m. S.W. of Bogotá. A cattle-exporting centre, and formerly noted for its cinchona, it trades in cocoa, and manufactures silk and hats. Founded in 1550 by Jesuits, it was destroyed by Indians in 1569, and rebuilt in 1612. Pop. 10,000.

Nejd. Independent emirate or principality of Central Arabia. Situated on the E. side of the Hejaz, and extending E. to include El Hasa on the N.W. of the Persian Gulf, it is the modern representative of the empire of the Wahabis (*q.v.*). Its people are pure Arabs, and its capital is Riyadh, on the pilgrim road from the Persian Gulf to Mecca. The country is for the most part an elevated desert plateau, but there are a number of fertile valleys and oases. Nejd is famous for its fine horses. The emir Abd el-Aziz es-Saud expelled the Turks from Hasa in 1913, and was recognized as Vali in the following year. His independence dates from the downfall of Turkey during the Great War. Off the coast of Hasa lie the British Bahrein Islands, largely peopled by Arabs from Nejd. Pop. est., 250,000 *See Arabia; N.V.*



Julia Neilson,
British actress
Elliott & Fry

Nejef or **MESHED ALI**. City of Mesopotamia. Situated near the Euphrates, about 40 m. S. of Kerbela and 100 m. S.W. of Bagdad, it contains the tomb, in a magnificent mosque, of Ali, Mahomet's son-in-law, and is therefore a holy city to the Shiite Mahomedans, who make annual pilgrimages to it in large numbers. During the Great War it was occupied by the British in April, 1918, after a siege. Rebel tribesmen, instigated by Turkey and Germany, had assassinated the British political officer there, spread unrest up and down the Euphrates valley, and when threatened by a punitive column retired into the city. Pop., 20,000.

Nekrasov, NIKOLAI ALEXIEYEVITCH (1821-77). Russian poet. Born in the gov't. of Yaroslav, he



N. A. Nekrasov,
Russian poet

was educated at the St. Petersburg cadet school, but abandoned a military career for literature. After a hard struggle, he became known as the poet of the

Russian proletariat, whose miserable condition during the last years of serfdom he realistically describes. He died at St. Petersburg. His best known poem is *Who Can Live Happy and Free in Russia?*

Nell, LITTLE. Character in Charles Dickens's novel *The Old Curiosity Shop*. The gentle, patient granddaughter of old Mr. Trent, proprietor of the curiosity shop, she wanders the country with him after ruin has overtaken his efforts



Little Nell and her grandfather, characters in Dickens's *Old Curiosity Shop*. From an illustration by Fred Barnard

to win a fortune for her at the gambling tables, and eventually dies in a country village.

Nellore. Dist. and town of Madras Presidency, India. The dist. extends along the Coromandel coast on both sides of the mouth of the Penner for 140 m., and includes a coast strip some 50 m. wide. The rainfall is 35 ins. annually, and irrigation is necessary owing to its uncertainty. The chief crops are native food grains and rice. Mica is mined at Gudur, Rapur, etc., in the S. of the dist. The capital is a small town on the Penner where it is bridged by the Madras-Calcutta main line. It is joined to Madras by the Buckingham Canal. Area, 7,973 sq. m. Pop., dist., 1,328,000; town, 33,300.

Nelson. River of Canada. It carries the waters of Lake Winnipeg in a N.E. direction into Hud-

Nelson. Town of British Columbia, Canada. It stands on the west arm of Kootenay Lake, and is served by the C.P.R. and C.N.R., being 1,100 m. from Winnipeg. The capital of the Kootenay district, it is a centre for the mining, lumbering, and other activities of the neighbourhood. Here are railway shops, saw mills, and works for making jam, cigars, etc. The buildings include a court house. Steamers go from here to other places on the lake. Nelson dates from 1886, when a silver mine was opened in the neighbourhood. Pop. 7,000.

Nelson. Town of New Zealand. Situated on Tasman Bay, an indentation on the N. coast of S. Island, it is the chief town of the dist. of the same name. The surrounding district is mainly pastoral. Communication with the other



Nelson, New Zealand. Residential quarter of the town, nestling among the hills, looking inland from the north-west

son Bay after a course of 360 m. Its main tributary is the Burntwood; owing to rapids it is navigable only for short distances. At its mouth stands Port Nelson. The name is sometimes applied to the same stream, otherwise called the Saskatchewan, before it enters Lake Winnipeg; the total length being 1,660 m.

Nelson. Mun. borough of Lancashire. It is 3 m. from Burnley and 30 m. from Manchester, with a station on the L. & Y. Rly. The industries include cotton and confectionery factories, and engineering works. The chief buildings include the town hall, market hall, free library, and technical schools. There are several public parks and recreation grounds. The council supplies water, gas, public baths and electricity, and provides a tramway service to connect the town with Burnley, Colne, and other places in the vicinity. Nelson and Colne unite to send a member to Parliament. Wholly of modern growth, Nelson was made a borough in 1890. Market day, Fri. Pop. 39,500.

large towns is by coasting steamer; a rly. runs S.W. to Glenhope, and is to be continued to the towns on the western coalfields, thus providing rly. connexion with Christchurch. The coach road now in use goes through the romantic Buller gorge. The first settlement was made by the New Zealand Co. in 1841. Pop. 10,000.

Nelson, EARL. British title borne by the family of Nelson since 1805. Horatio Nelson's barony, and also his title of duke of Brontë, passed, on his death, to his brother, the Rev. William Nelson, who, in recognition of Horatio's services, was made Viscount Merton and Earl Nelson in 1805. He, too, left no sons, and by the remainder the titles passed to Thomas Bolton, a son of the admiral's sister, who took the name of Nelson and became the 2nd earl. The third earl was his son Horatio (1823-1913), a clergyman, on whose death Thomas Horatio (b. 1859) became the 4th earl. The family seat is Trafalgar House, near Salisbury, and the earl's eldest son is known as Viscount Merton.

HORATIO, VISCOUNT NELSON

H. W. Wilson, Naval Correspondent of The Daily Mail

See in addition the articles on Nelson's battles, e.g. Nile; Trafalgar; also those on his contemporaries, St. Vincent; Collingwood; and other seamen. See also Bronte; Navy, British; Sea Power; Victory

Horatio Nelson was born Sept. 29, 1758, the sixth child of Edmund Nelson, rector of Burnham Thorpe, Norfolk; his mother was a grand-niece of Sir Robert Walpole, and her brother, his uncle, an officer in the navy. He entered the navy in 1770 as "captain's servant" in his uncle's ship, served in the West Indies, in an Arctic expedition, and in the East Indies. He became captain in 1779; commanded the naval contingent in an unsuccessful expedition against the Spanish fort at San Juan de Nicaragua, 1780; joined Lord Hood's fleet at New York, 1782, when Hood sent Prince William, afterwards William IV, to him for information on tactics; and was employed in the West Indies, 1784-87.

In 1787 Nelson married Frances Herbert Nisbet, a widow of 26 with one son. He commanded the *Agamemnon* in the Mediterranean fleet, in 1793, under Hood; was largely responsible for the capture of Bastia and Calvi in Corsica, in 1794, when he lost the sight of his right eye by a wound; he displayed great gallantry in the action of March 13-14, 1795, with the French fleet, and was bold enough to remonstrate with his admiral (Hotham) on the feebleness which that officer displayed. He blockaded the Italian coast, and attempted to cut Napoleon's communications during the campaign of 1796. When Jervis, later Lord St. Vincent, took command of the fleet and decided to withdraw from the Mediterranean, he was charged with the evacuation of Elba, narrowly escaping capture by the Spaniards on his retreat.

St. Vincent and Abukir Bay

Present at the battle of St. Vincent, Feb. 14, 1797, he secured important results by turning out of the line—contrary to orders and on his own initiative—to attack a part of the Spanish fleet which had been cut off. Of four Spanish ships taken two surrendered to him. In Feb., 1797, he became a rear-admiral, and was knighted. On July 25, 1797, he failed in a night attack on Santa Cruz, Tenerife, and his right arm, shattered by grape, had to be amputated. After some months at home, he rejoined St. Vincent's fleet, and was sent in command of a small detached squadron to watch Toulon, whence Napoleon, with 13 ships of the line under Brueys, was about

to sail for Egypt. In May, 1798, Brueys put to sea, Nelson's squadron having been damaged by a storm. Nelson was joined by reinforcements, bringing his strength up to 14 ships of the line, and hurried in pursuit. After a long search he found and destroyed the French fleet in Abukir Bay, Aug. 1, 1798. Nelson, who had entered the battle with the words, "A peerage or Westminster Abbey," was badly wounded in the head. He was made Baron Nelson of the Nile, and given a pension of £2,000.

In Sept., 1798, he went to Naples, which was under special British protection, was effusively welcomed by Lady Hamilton, wife of the British minister there, and conveyed the king and court to Palermo, when the French took Naples in 1799. On the recovery of the city he was responsible for the execution of Caracciolo (*q.v.*). Created duke of Bronte by Ferdinand I of Naples, 1799, in 1800, he returned home with Lady Hamilton, who now, as he said, became his "wife in the sight of God," and by whom a daughter, Horatia, his only child, was born to him about Jan. 31, 1801.

Copenhagen

Sent under Sir Hyde Parker to attack Copenhagen, he commanded the squadron of 12 ships of the line, which on April 2, 1801, engaged the Danish forts and ships. The battle was fierce; at one of the most critical moments Parker, from a distance, imperilled success by making a signal of recall. Nelson put his telescope to his blind eye and fought on. Having beaten down the Danish fire and disabled many of the Danish ships he secured an armistice which gave the British all they required. For his victory he was made a viscount.

After a few weeks in England he was appointed to command the British small craft in the Channel, watching Napoleon's invasion flotilla. On Aug. 15 he directed a boat attack on the Boulogne flotilla which failed completely, with heavy loss. In Oct., 1801, as peace was imminent, he was allowed leave and went to Merton Place, Surrey, which Lady Hamilton had bought for him. Here he lived with the Hamiltons.

On May 18, 1803, on the renewal of war with France, Nelson hoisted his flag in the *Victory*, to command the Mediterranean fleet, and a few weeks later began his watch of

Toulon. He did not blockade, but cruised far out, and there were fears that the French might escape without his knowledge. In 1804 Spain joined France, and his work became more difficult. He showed great patience and determination, and, possibly as the result of a promise to Lady Hamilton, never quitted his ship. The French fleet under Villeneuve put to sea in Jan., 1805. The moment he knew, Nelson proceeded first to Sicily, which he had special orders to cover, and then to Egypt in chase. The French, however, had returned to port. "My heart is almost broke," he said of his failure to bring them to battle. In March they came out again, and, joined by one French and six Spanish ships from Cadiz, which brought their force up to 18, sailed for the West Indies.

"The Nelson Touch"

Nelson, not knowing the direction of their movement, and so short of cruisers that he could not watch them properly, waited for definite news in a position that covered Sicily and Egypt. When information came he followed to the West Indies, rightly concluding that his business was to watch not a particular sea, but the French fleet usually stationed in it. He had with him only 10 ships of the line. He reached Barbados in June, received information which made him conclude that the French were returning to Europe, and followed them once more without delay, sending a small vessel in advance to England. She sighted the enemy on her passage, and thus the admiralty could make its plans. Nelson arrived in Europe ahead of the enemy.

The enemy had actually been encountered by Calder with 15 British battleships off Ferrol with indecisive result, and had turned south to Cadiz. Nelson, after a last visit to England and Merton, went on board at Portsmouth, where the people greeted him with tears of gratitude and love. Off Cadiz he joined Collingwood, and discussed what he called "the Nelson touch"—his plan of battle. He asked the admiralty for a strong force because, as he said, "it is only numbers which can annihilate." The enemy fleet was ordered by Napoleon to put to sea, and on Oct. 21 was fought the battle of Trafalgar.

Nelson drove the *Victory* into the enemy and was engaged by several ships. Conspicuous in his orders, he was mortally wounded by a marksman's bullet and carried below. As he lay dying, he said that he left Lady Hamilton and Horatia "as a legacy to my country." His flag-captain, Hardy, took

a touching leave of him, and, hearing that a great and decisive victory had been won, he died at 4.30 p.m. with the last words on his lips, "God and my country."

Nelson was given a state funeral in St. Paul's on Jan. 9, 1806. His brother was created Earl Nelson of Trafalgar and granted £108,000 to purchase an estate, and a pension of £5,000 a year. Horatia, his daughter, died in 1881, leaving many descendants of the family of Nelson-Ward. Lady Nelson received a pension of £2,000 a year, but no notice was taken of Lady Hamilton.

Nelson's genius as an admiral lay in his combination of marvellous daring with energy, knowledge, and judgement. He was not, as many have imagined, a man who believed in fighting whatever the risk. He knew the exact limitations of naval power. "I am not," he said, "one of those hot-brained people who fight at an immense disadvantage without an adequate object." In a letter to one of his friends, Strachan, he said: "Only recollect that it would be much better to let the French ships escape than to run too great a risk of losing the *Donegal* (Strachan's flagship), yourself, and your ship's company." On the eve of the battle of Trafalgar he delayed his attack and fell back towards Gibraltar, in the hope that he would be joined by six more ships.

A Leader of Men

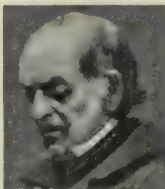
Nelson's methods, with such a superior force as was available in the Great War, would have brought decisive results against even such a well-trained and well-equipped fleet as the German. The French and Spanish fleets of his day were inferior in material and manned by ill-trained men, and it is another proof of his genius that he knew exactly what liberties could safely be taken with them. His decision, energy, knowledge, personal magnetism, affection for his subordinates, and sympathy for his seamen, and his magnificent valour made him one of the supreme leaders of men. He was loved by those he commanded, as was Napoleon.

He always aimed at decisive victory. His method of gaining it was based on a close study of tactics, in which he had excelled since 1782. He framed his plans with great originality and care, and saw that his officers thoroughly understood them, with the result that in his battles they always acted with energy and without hesitation. He disliked forming his fleet in a long single line, the established plan at that date, believing that from loss of time, variable winds, or "thick

weather," it never gave decisive results. He was ready to face the danger of his ships firing into one another in order to concentrate superior force on a part of the enemy. See Column; Copenhagen.

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Nelson, THOMAS, AND SONS. British publishing and printing house. Its founder, Thomas Nelson



Thomas Nelson,
British publisher

(1780 - 1861), was born near Stirling, son of a farmer. He started business in Edinburgh in 1798, after experience in London, and when his two sons, William (1816-87) and Thomas (1822-92), were taken into partnership progress was rapid. Thomas invented a rotary press (1850), and other devices affecting bookbinding, photozincography, stereotyping, etc. From the publication of cheap religious works, the firm went on to the issue of juvenile literature, gift books, Royal Readers, and other educational works, and entered into partnership with Bartholomew & Co. for the production of maps and atlases. The London house was established in 1844.

Nematoda (Gr. *nema*, thread; *eidos*, form). In zoology, an order of metazoa, worm-like in form. Many are parasitic in the human being. See Ankylostomiasis; Ascariis; Filariasis.

Nem. con. Abbreviation for *nemine contradicente*, no one contradicting.

Nemea. Valley in Argolis, ancient Greece. Here Hercules was said to have killed the Nemean lion, and here, in the precincts of a temple to Zeus, were celebrated every two years the Nemean games, one of the four great athletic festivals of Greece. See Ludi.

Nemertea (Gr. *Nemertes*, the sea-nymph daughter of Nereus). In zoology, a class of flat worms, most of them marine. One or two species occur on land, and a few in fresh water. They are long and ribbon-shaped, without limbs, and vary in size from very minute

forms to one marine species, which is often nearly 100 ft. in length. The most remarkable feature of the Nemertines is the long, retractile proboscis, forming a tube within the body which can be partly everted and extruded. It is flung out like a lash, which coils round the body of its victim and draws it to the mouth. In some species this proboscis is armed with a spike connected with a poison gland. See Worm.

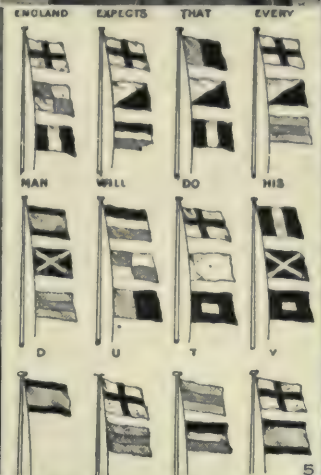
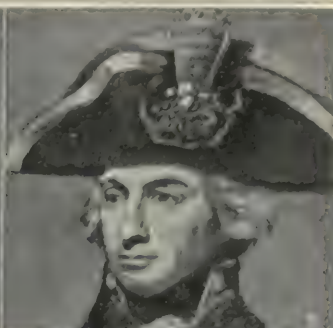
Nemesis. In Greek mythology, daughter of Night and one of the deities of the nether world. She was the goddess of vengeance, punishing the guilty, but at the same time rewarding virtue, and thus became the personification of respect for law and justice.

Nemeskossuth. Town of Czechoslovakia, in the S. of Slovakia, formerly in Hungary. It is on the main rly. line 27 m. E. of Bratislava (Pressburg), close to the rly. junction of Galanta. Pop. 1,200.

Nemi. Crater lake of Central Italy. It is in the Alban Hills, between Velletri and Albano, 20 m. S.E. of Rome. It is 3½ m. in circuit, 110 ft. deep, and lies at an alt. of 1,060 ft.; area 70 acres. Of great beauty, it was called the Mirror of Diana, whose temple was in a neighbouring grove. It is still drained by a tunnel excavated by the Romans. Remains of two state barges of Caligula's time have been recovered, as also many other Roman relics, including mosaics, bronze ornaments, rings, ex-voto statuettes, and coins. See Golden Bough.

Nemophila. Genus of annual herbs of the natural order Hydrophyllaceae. *N. insignis* was introduced from N. America in 1822; it bears conspicuous saucer-shaped blue flowers with white centres, and flourishes in open borders when sown in early spring, or indoors in leaf-mould.

Nemours. Town of France. In the dept. of Seine-et-Marne, it is 10 m. S. of Fontainebleau. It stands on the Loing, while a rly. line connects it with Paris. The chief buildings are the 16th century church and a castle. Sand is quarried in the vicinity. Roman remains have been found. Nemours was the chief town of a county, which in 1404 was made a duchy for the king of Navarre. This belonged in turn to the families of Bourbon, Armagnac, and Foix. After the death of Gaston de Foix in 1512, the duchy passed under various rulers until, about 1670, it was given by Louis XIV to his brother Philip, duke of Orleans. The Orleans family held it until the Revolution. Pop. 5,000.



Nelson Bronte

1. As a midshipman, from a painting attributed to T. Gainsborough. 2. As a captain, at the age of 22, after J. F. Rigaud. 3 and 4. Two portraits of Nelson in 1801, as vice-admiral, by Lemuel Abbott. 5. The famous

signal flown from the Victory before the battle of Trafalgar. 6. As vice-admiral, after J. Hoppner. 7. The Death of Nelson in the cockpit of the Victory, Oct. 21, 1805; from the painting by A. W. Devis

NELSON: BRITAIN'S NAVAL HERO BEFORE AND AFTER TRAFALGAR

Nemours, LOUIS CHARLES PHILIPPE RAPHAËL D'ORLÉANS, DUC DE (1814-96). French soldier.



Duc de Nemours,
French soldier

Born in Paris, Oct. 25, 1814, the second son of Louis Philippe, he took part in the French expedition in Belgium, 1831-32, and served in Algeria, 1836-37 and 1841, becoming lieutenant-general. He was named prospective regent, and was an active member of the house of peers until the revolution of 1848, when he took refuge in England until 1871. In 1840 he married Victoria Augusta of Saxe-Coburg-Gotha (1822-57). He died at Versailles, June 26, 1896.

Nen or **NENE.** River of England. It rises in the W. of Northamptonshire and flows S.E. to Northampton, where it takes a N.E. direction past Wellingborough, Thrapston, Oundle, Peterborough, and Wisbech to the Wash; which it enters 3 m. below Sutton Bridge. It has a canal communication with all the central waterways of England, and is navigable for small vessels. Its length is 90 m.

Nenagh. Market town and urban dist. of co. Tipperary, Ireland. It stands on the river Nenagh, 27 m. from Limerick and 96 m. from Dublin, with a station on the G.S. & W. Rly. The keep of the castle, at one time the residence of the family of Butler, still stands. In the Middle Ages the Franciscans and Austin Friars had houses here. There is an agricultural trade, while slate is quarried. Market days, Thurs. and Sat. Pop. 5,000. The river Nenagh is 14 m. long and falls into Lough Derg.



Nenagh urban
district seal

Nennius. Welsh historian. Little is known of him, save that he lived in S. Wales and wrote in Latin a History of the Britons, completed in 796. To him are due many of the stories told about King Arthur, but the worth of his work is seriously questioned. The best scholarship values only a section, believed to be taken from the work of a northern writer, which gives information about the conquest by the Anglo-Saxons.

Neo-Caesarea, SYNOD OF. Synod of the Church, held about 315 at a town in Pontus. It passed

canons dealing with eccles. discipline, decreeing, *inter alia*, that a priest who married after ordination must be deposed; that no priest might attend a second marriage; and that no one should be ordained under 30 years of age. At a second synod of this name, held about 358, Bishop Eustathius of Sebaste was condemned.

Neocomian. In geology, the name given by J. Thurmann to the lowest stage of the Cretaceous system of rocks. It is usually taken as being synonymous with the Lower Cretaceous. *See* Cretaceous.

Neodymium. One of the elementary metals. Its chemical symbol is Nd; atomic weight, 144.3; specific gravity, 6.956; and melting point, 840° C. It was obtained in 1885 by Auer von Welsbach by submitting to fractional crystallisation the double ammonium and sodium nitrate of didymium (*q.v.*). It is found, associated with lanthanum, in the rare earths.

Neo-Impressionism. Modern school of painting. The neo-impressionists are an offshoot of the impressionist school, differing from the latter in carrying the analysis of light by the division of tones to the farthest possible limit, and also in the reversion, to some extent, to design in composition. The chief exponents of neo-impressionism in France, where the movement originated, were Georges Seurat, Lucien Pissarro, Paul Signac, and Louis Valtot. The movement really embodied a scientific revolt against impressionism pure and simple. *See* Impressionism.

Neolithic (Gr. *neos*, recent; *lithos*, stone). Term introduced by Lord Avebury to denote the later phase of the prehistoric stone-age civilization which preceded the use of metals. It is distinguished from the older or palaeolithic phase by the more advanced workmanship, especially the polishing and grinding of the cutting edges, as well as by the variety of form and use, displayed by implements wrought out of flint and other hard stones.

It is not, however, from its lithic industries as such that the later stone age derives its importance in human history. Kitchen-middens, lake-dwellings, inhabited caves, burial mounds, and megalithic rude stone monuments show that neolithic man gradually achieved momentous advances in other directions also. Among these were the inventions of basketry, weaving, and pottery, and the domestication of animals and plants, which turned men from mere hunters and fishers into herdsmen and farmers. Side by

side with these developments arose corn-grinding, navigation, and the first principles of stone and timber architecture. These amenities led to improved social organization, the reverential treatment of the dead, and the emergence of the theistic principle in religion.

Notwithstanding the lack of chronological data, attempts have been made to divide the neolithic age of each cultural region into early, middle, and late periods. Reliance is placed on the development of style, aided by evidence drawn from the relative position of stratified remains. Exact work of this kind was first done by Prof. Petrie in connexion with the pre-dynastic pottery of Egypt.

Although the stone age was succeeded among all the progressive peoples of the Old World by an age of metals, there have survived to modern times in every continent primitive peoples whose cultural outlook remained neolithic, even after the existence of metals was learned from external sources. The New World was peopled in a distant past by bands of neolithic folk from Asia, who developed through centuries of isolation the cultural elements brought with them. The result was that aboriginal America was still essentially neolithic at the European discovery. *See* Anthropology; Callernish; Man; Stone Age; consult also The New Stone Age in N. Europe, J. M. Tyler, 1921.

Neon. One of the gaseous elements. It is present in the atmosphere in the proportion of about one part in 80,000. It occurs mixed with argon, and was discovered by Sir William Ramsay in 1898 when examining a large quantity of argon. This latter gas was liquefied, and it was found, as the temperature was raised, that a lighter gas than argon was present. To this the name neon ("new") was given. It was not until two years afterwards that a sufficient quantity of the gas could be collected for an extended study of its properties. Neon is recognized by its spectrum, which consists of a great number of red, orange, and yellow lines. Chemical symbol Ne.

Neonal. Perchlorate safety explosive, in which nitroglycerine is used as the sensitiser. It is of a similar type to the Permonites but it contains more nitro-glycerine and wood meal; while the ammonium nitrate has been replaced by ammonium oxalate, so that the material is not hygroscopic. The oxalate reduces the flame temperature sufficiently for the explosive to pass the Rotherham test. *See* Explosives; Safety Explosives.

Neophyte (Gr. *neos*, new; *phyein*, to plant). Term applied in the early Christian church to newly baptized converts, as distinguished from the catechumens (*q.v.*). The word is explained by Gregory the Great as meaning "newly planted in the faith." Neophytes wore white garments for eight days after baptism. S. Paul instructs Timothy (1 Tim. iii. 6) not to make a neophyte a bishop, but this prohibition was sometimes disregarded in exceptional cases, S. Ambrose being elected bishop of Milan before being baptized, and installed a few days after. The term is also applied to those newly admitted to the priesthood, or to a religious order. The word is now used in a general sense for a beginner or tiro.

Neo-Platonism. System of philosophy which attempted to replace the dualism of mind and matter by monism (*q.v.*), and to solve the problems of virtue and knowledge on a religious basis. Essentially eclectic, it included Pythagorean, Aristotelian, Platonic, Stoic, Christian, Jewish, and other Oriental elements. There were three distinct schools of neo-Platonism: Alexandrian, Syrian, Athenian. Its chief representatives, Ammonius Saccas, Plotinus, Porphyry, Iamblichus the Syrian, and Proclus the Lycian, are treated separately.

The keynote of the system is supposed direct intercourse with the absolute, divine being as the result of ecstatic visions. There are three cosmical principles: the One, absolute unity, which creates by emanation the Logos (word, reason), containing the ideas of things, which in turn produces the Soul, the principle of movement, which represents the ideas in the external world. Individual souls hover between reason and sense, ever striving to free themselves from the shackles of matter, and to return to the world of ideas, there to be absorbed and lost in God. Although it failed as a popular religion, neo-Platonism left permanent traces, seen in Augustine and Boëthius, in Giordano Bruno, and Jacob Boehme, in Fichte and Schelling, and modern theosophical speculations. See Philosophy.

Neo-Pythagoreanism. An attempt to revive the doctrines of Pythagoras, combined with Peripatetic, Stoic, and Oriental elements, which originated at Alexandria in the 1st century B.C. Its chief representatives were Nigidius Figulus, a friend of Cicero, and Apollonius of Tyana. Many forged treatises were put forward by enthusiasts as genuine works of Pythagoras (*q.v.*).

Neoptolemus or **PYRRHUS.** In Greek legend, son of Achilles. He joined the Greek forces before Troy in the tenth year of the war, a soothsayer having declared that the assistance of Neoptolemus and Philoctetes was necessary to end the war. Neoptolemus was one of those who were concealed in the Wooden Horse—the stratagem which led to the fall of the city. He killed with his own hand Priam, the king, whose daughter, Polyxena, he sacrificed to the shade of Achilles. At the distribution of the spoil, Andromachë, Hector's widow, fell to his lot. He subsequently married Hermione, daughter of Menelaus, and was slain at Delphi by Orestes, to whom Hermione had been promised.

Neosho. River of the U.S.A. Rising in the east-central part of Kansas, it flows S.E. and S. into Oklahoma, where it turns S.W. by S. to the Arkansas river, near Fort Gibson. Its length is nearly 400 m.

Neozoic (Gr. *neos*, new; *zōē*, life). In geology, all the strata from the Trias to recent times. The word has been used by some geologists as synonymous with the Cainozoic era.

Nepal. Independent kingdom of N. India. It lies N. of the plains among the Himalayas and adjoins Tibet on the N., and Sikkim on the E. Dhaulagiri and Everest are within the state, which is drained by the upper waters of the Gogra, Gandak, and Kosi. The lower slopes are rainy and forest covered, yielding sal and sisu; the valleys are cultivated for rice, millets, tobacco, and oil seeds. Some of these crops are exported in exchange for cottons and metal goods. Trade is maintained with Tibet. Government is a military oligarchy, the royal authority being invested in the prime minister. The people are the dominant Gurkhas and aborigines of Mongolic origin. The British resident in the capital, Khatmandu, takes no active part in the internal administration; although Gurkhas enlist in the Indian army, no explorer is allowed within the country, which is almost as unknown as Tibet. Garhwal and Kumaon became part of the United Provinces after the war of 1814-16. Area 54,000 sq. m. Pop. 5,500,000.

Nepenthes. Genus of insectivorous plants, commonly known as pitcher-plants (*q.v.*).

Nepheline. In mineralogy, a silicate of aluminium and sodium. Colourless to light yellow, red, or green in colour, it has a glassy or greasy lustre according to the variety. It is found in volcanic rocks, and certain crystalline rocks,

as syenite, in Italy, France, N. and S. America, etc. Varieties of nepheline are used as gemstones.

Nephtin. Mountain of Ireland. One of the highest summits in co. Mayo, it is situated 10 m. S.W. of Ballina; alt. 2,646 ft. To the W. is Nephin Beg, alt. 2,065 ft.

Nephoscope. (Gr. *nephos*, cloud; *skopein*, to observe). In meteorology, an instrument for measuring the motions of clouds. In its simplest form it consists of a horizontal circular mirror, in which the cloud is reflected. The motion of the cloud is observed through a movable eye-piece, such that the cloud image is kept apparently in the centre of the mirror. The movement of the eye-piece over a graduated arc attached to the mirror, which has also a graduated concentric circle attached to it, enables the observer to calculate the rate and direction in which the cloud is travelling. See Cloud; Meteorology.

Nephrite (Gr. *nephros*, kidney). In geology, a variety of amphibole. White to dark green in colour, it is a calcium, magnesium, ferrous silicate, and has been highly valued as an ornamental stone in all countries and ages. Carved ornaments of nephrite have been found among the remains of primitive man in large numbers in China and Mexico, Switzerland, Germany, France, etc. The word jade is used to describe this mineral and jadeite, as they are extremely similar in appearance. Jadeite, however, is easily fusible, whereas nephrite is infusible. See Jade.

Nephritis. Inflammation of the kidney. It may be acute or chronic. Acute nephritis may be due to exposure to cold and wet, particularly after excessive indulgence in alcohol; poisoning by substances which irritate the kidneys, such as cantharides, turpentine, potassium chloride; and may occur in the course of various diseases, particularly scarlet fever, and less frequently enteric, measles, diphtheria, chicken-pox, and others. It may also be associated with syphilis and tuberculosis. When due to exposure to cold, the onset is abrupt. When occurring in the course of fevers, the symptoms appear more gradually. Shivering fits and rise of temperature may be the first signs. Dropsy occurs early, and may be first noticed as a puffiness of the face, or swelling of the ankles.

The patient should be kept in bed, and the kidneys relieved of their functions as much as possible, by stimulating the excretory activities of the skin and bowels. Sweating may be produced by hot air or

vapour baths, or by the administration of pilocarpine. The bowels should be kept open by saline purges. Pain in the back may be relieved by the application of hot fomentations. Dropsy of the abdomen or of the chest may necessitate removal of some of the fluid by aspiration. See Bright's Disease.

Nephtys. Egyptian goddess. The name is the Grecised form of Nebt-het, lady of the house. Perhaps personifying the dusk, she was the wife of Set and sister of Isis, whose lament over the bier of Osiris she shared. Portrayed as a woman crowned by her hieroglyphic symbol—perhaps a house and basket—she was worshipped at Edfu, Dendera, and elsewhere. See Egypt.

Nepos, CORNELIUS. Roman writer of the first century B.C. A friend of Cicero, he wrote voluminously on many subjects, but everything has been lost, except a section of a work entitled *Illustrious Men*. This is of no value as a contribution to history, but the simplicity of its style has made it a favourite text-book for beginners in Latin.

Nepotism (Lat. *nepos*, grandson). Term applied to the practice of showing undue favour to relatives, especially by ministers of state or others exercising patronage. In Church history the term is applied to the abuse of eccles. patronage by popes and bishops.

Neptune. In Roman mythology, the god of the sea, identified with the Greek Poseidon (q.v.).

Neptune. In astronomy, the outermost known planet. Its discovery is remarkable for the fact that its orbit was calculated by Leverrier and Adams before the planet had itself been seen. It was first actually seen by Galle, of Berlin, who found it from particulars supplied by Leverrier on Sept. 23, 1846. It can only be seen by the telescope. On Oct. 10, 1846, Lassell discovered a satellite, which was not, however, photographed till 1899 at Pulkova. The existence of a second satellite is suspected, but it has not yet been photographed.

The distance of the planet from the sun is 2,794,000,000 m., and its period of revolution about the sun is 165 years. Its satellite revolves about the planet in a retrograde direction, or E. to W., in five days and twenty-one hours. Wirtz, of Strasbourg, in 1903, calculated its diameter at about 31,225 m., and its mean density at 1.54. There is spectroscopic evidence of an enveloping atmosphere of unknown gases and also

free hydrogen. That Neptune may not be the most remote planet of the solar system has been suggested many times since the discovery of the planet. In 1879 Flammarion suggested a means of search, by observations of comets. There are two groups of comets which appear to pass round some point far beyond Neptune. Professor George Forbes, of Edinburgh, has maintained that this distant point or points indicates the orbit of a planet, or of two planets, and has computed positions for the nearer of these planets. Professor Todd, of Amherst, has calculated the position of an extra Neptunian planet by examining the perturbation of Uranus. His calculations assign the same position as Forbes to the unknown planet. See Planet; Sun.

Nérac. Town of France. In the dept. of Lot-et-Garonne, it is on the river Baise, 15 m. W.S.W. of Agen. Here are remains of a castle of Henry of Navarre. Immense forests to the W. provide the raw material of its principal industry of cork-making. Pop. 6,400.

Nerchinski Zavod. Town o. Siberia. It is in the prov. of Transbaikalia, on the Altacha, 260 m. S.E. of Chita. The important mines in the district, gold, silver, mercury, tin, iron, coal, salt, are worked by convict labour. Pop. dist., 67,000; town, 3,000.

Nereis. Genus of polychaete (many-bristled) sea worms. The body consists of a long series of segments, each bearing numerous chaetae or bristles. Most have a definite head, which may be provided with tentacles, and some have gills. They live in burrows in the mud and rock crevices.

Nereus. In Greek mythology, an ocean deity with the gift of prophecy. He was represented as an old man with the tail of a fish or serpent. He had 50 daughters, the Nereids, one of whom was Thetis, the mother of Achilles.

Nergal. God of war, pestilence, and hunting, worshipped by the city of Cuthah, near Babylon. He is represented with the body of a winged lion and a man's head.

Neri (Ital., Blacks). Name given about 1300 to a faction in Florence. During a quarrel about the way in which the city should be governed, the nobles were split up into two parties, the Neri headed by the Donati family, and the Bianchi or Whites by the Cerchi. This feud disturbed the peace of Florence during the early 14th century. Charles of Valois intervened on behalf of the Neri, and the exile o. Dante was due to their hostility. See Florence.

Neri, PHILIP (1515-95). Italian priest and saint, founder of the Oratorians. Born at Florence,

July 21, 1515, he refused to become heir to his uncle, a wealthy merchant. In 1533 he went to Rome and studied theology. He visited the sick, founded a hospital, established a Confraternity of the Holy Trinity, and delivered daily addresses which attracted even princes and cardinals. Ordained priest in 1551, in 1558 he formed a number of young men into the Congregation of the Oratory, an order of priests and laymen observing a common rule, but not under vows, their aim being to teach the ignorant and convert the worldly. He died May 25, 1595, and was canonised in 1622. See Oratorians; consult also Lives, P. J. Bacci, 1622, Eng. trans. ed. F. I. Antrobus, 1902; Mrs. Hope, 1859.



S. Philip Neri,
Italian priest

Nernst, WALTER (b. 1864). German physicist. Born June 25, 1864, he was educated at Graudenz, and at the universities of Zürich, Berlin, and Würzburg. In 1887 he became assistant in the chemical laboratory of Ostwald, at Leipzig, and 1891-94 was professor of chemistry at Göttingen. In 1905, after having been for ten years the head of an institute for physics, he was chosen professor of chemistry at Berlin, where he became also director of the institute for physics. Nernst is known by his writings on chemistry, and by his invention of the Nernst incandescent electric lamp. He was awarded the Nobel prize for chemistry, 1920.

Nero. Mountain of Italy, a peak of the Julian Alps, formerly in the Austro-Hungarian crownland of Görz. It is 7,370 ft. in height, and 7 m. N.E. of Caporetto. The mountain and region were prominent in the battles of the Isonzo fought between the Austrians and Italians, 1915-17.

Nero (37-68). Roman emperor. Originally named Lucius Domitius Ahenobarbus, he was the son

of the emperor Claudius, by whom he was adopted in 50, thenceforth bearing the name of Nero. On the death of Claudius in 54, Nero was made emperor. For the five



Nero,
Roman emperor

years of his minority the empire was well administered. Then Nero threw aside his tutors and ministers, and for nine years indulged in that orgy of tyranny which has made his name a byword for all time. His tutor Seneca, his mother Agrippina, his wife Octavia, were all done to death; anyone who offended him, or whom he distrusted, was murdered with or without the form of law.

He plunged into licentious dissipation, and shocked all Roman conventions by posing publicly as a musician and an artist. In 64 fires broke out in Rome by which half the city was consumed; men whispered that the destruction had been planned by the emperor himself. But Nero announced that the thing had been done by the obscene sect of the Christians, upon whom a frightful persecution was let loose. Life in Rome became a nightmare; the horror grew till Galba, one of the provincial generals, led his troops upon Rome. In the face of danger the coward emperor fled, and when he heard the tramp of the approaching troops, died by his own hand, 68. Theatrical to the end, his last words were "What an artist is lost in me!" See Agrippina; consult also Life, B. W. Henderson, 1903.

Nertchinsk. Town of E. Siberia. It is in the prov. of Transbaikalia, on the Nertcha, and a station on the Siberian railway, 530 m. E. of Irkutsk. The inhabitants of the district are chiefly occupied in agriculture, cattle-rearing, tobacco cultivation, and the hunting of furred animals, especially the sable. There are lead and silver mines near by. Pop. 7,000.

Nerva, MARCUS COCCÆUS (32-98). Roman emperor. A man of eminent respectability, though not



Marcus Nerva,
Roman emperor

of great capacity, he was chosen emperor on the assassination of Domitian in 96, after whose tyranny his mild rule was a welcome relief. He took an oath that he would put no senator to death, suppressed the worst of the informers who had disgraced the latter part of Domitian's reign, and interested himself in public charity. He adopted Trajan and died Jan. 27, 98.

Nerval, GÉRARD DE. Adopted name of the French writer, Gérard Labrunie (1808-55). Born in Paris, May 21, 1808, he was the son of a doctor. His father taught him

several languages and, of a studious and eccentric nature, he soon began to write. In 1828



Gérard de Nerval,
French author

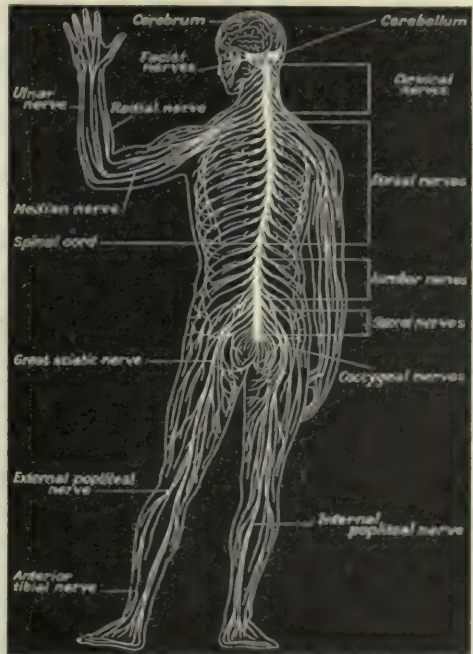
he translated Faust, and volumes of verse and prose appeared from then until, following an attack of insanity, he committed suicide, Jan. 25, 1855. Nerval's best work is in his fantastic stories, *Contes et Facéties*, 1852, and *Les Filles du Feu*, 1854, though his Aurélie has special interest as a record of his own madness. His *Sylvie*, 1848-50, is also noteworthy. He also wrote comedies, a drama, and articles for periodicals. Among his friends were Gautier and Dumas. His complete works, with a notice by Gautier, appeared in 1876. See Gérard de Nerval, G. Ferrières, 1906.

Nerve. Cord-like structure composed of nerve fibres, i.e. long branches of nerve cells which convey impulses from one part of the body to another. Nerves which convey impulses from nerve centres, such as the brain, are called efferent nerves, and those which carry impulses from the periphery to nerve centres are known as afferent nerves. If, for example, a painful stimulus is applied to the hand, the impression is conveyed to the brain, which then sends out an impulse through the efferent nerves, which withdraws the hand from the source of pain. See Brain; Ganglion; Neuron.

Nervous System. System of nerve cells and nerve fibres which control or regulate the actions and functions of every part of the body. The nervous system consists of two main divisions, the cerebro-spinal system, comprising the brain and spinal cord, and the vegetative or autonomic, consisting of the sympathetic nervous system, and certain other ganglia, i.e. aggregations of nerve cells and fibres. The cerebro-spinal system controls the movements of muscles

and carries out actions consciously directed by the individual. The autonomic system regulates functions and actions which are not under voluntary control, as, for example, the peristaltic movements of the intestine and the processes of digestion. The two systems are, however, not entirely independent.

Diseases of the nervous system may be divided into two main classes: (1) Functional nervous diseases (or more properly disorders), in which no pathological changes in the system can be detected. (2) Organic diseases associated with degeneration in the nerves or nerve cells following injury—for example, a blow on the head, or rupture of an artery in the brain, as in apoplexy; chronic poisoning, as in alcoholic neuritis; effects of micro-organisms, as in diseases of



Nervous System. Diagram of the network of nerves in the human body seen from the back

the nervous system due to syphilis; and other causes yet unknown.

Nerves also exercise a nutritive action upon the parts they supply. Thus, when the nerves directly supplying a group of muscles are severed, as for instance by a gunshot wound, the muscles cease to respond to stimuli, and show marked wasting. When the injury or degenerative process is not in the nerve immediately supplying the part, but is situated in a higher nerve centre, such as the brain, which controls the lower nerves, then the condition known as spastic paralysis is produced, in

which stimuli produce jerky, exaggerated movements, and the muscles are usually less wasted. See Apoplexy; Brain; Disseminated Sclerosis; Ganglion; General Paralysis of the Insane; Hysteria; Infantile Paralysis; Locomotor Ataxia; Myelitis; Meningitis; Motor Nerves; Neuralgia; Neurasthenia; Neuritis; Neurosis; Paralysis; Paraplegia; Spinal Cord.

Néry. Village of France, in the dept. of Oise. It is 10 m. S. of Compiègne, and was notable for a British stand on Sept. 1, 1914. See Compiègne-Néry, Battle of; Mons.

Nesbit, EDITH (1858-1924). British author. Born in London and educated in France and Germany, she published *Lays and Legends*, 1886, and made a reputation as a poet and as a writer of tales for children. Among her many publications are *A Pomander of Verse*, 1895; *Songs of Love and Empire*, 1897; *The Book of Dragons*, 1900; *The Would-Be-Goods*, 1901; *Five Children and It*, 1902; *The Magic City*, 1910; *Ballads and Lyrics*, 1910; *Garden Poems*, 1914. In 1879 she married Hubert Bland (1856-1914). She died May 4, 1924.

Nesle. Town of France, in the dept. of Somme. It is on the river Ingon, 29 m. E.S.E. of Amiens, and 8 m. W. of Ham. It possesses a 13th century church. Captured by the Germans early in the Great War, it was recovered by the French on March 18, 1917, during their pursuit of the Germans to the Hindenburg line. Abandoned by the Allies in March, 1918, it was recovered by the French on Aug. 28, 1918. Before the Great War the town had a population of about 2,600. *Pron.* Nail.

Ness. Topographical term for a cape. It occurs in place-names on the E. and S. coasts of Great Britain, e.g. Sheerness, Buchan Ness, Dungeness. Like naze, it is akin to nose.

Ness. River of Scotland, in the co. of Inverness. It comprises the 7 m. waterway from Loch Ness to Moray Firth, and is noted for its salmon-fishing. Parallel with it is the N. section of the Caledonian Canal. See Inverness.

Ness, LOCH. Lake in Inverness-shire, Scotland. It forms a part of the Caledonian Canal, and lies in the valley of Glenmore between steep wooded scarps, receiving the waters of the Oich, Morriston, Foyers, Tarff, and other rivers, while its surplus waters are carried to the Moray Firth by the Ness river. Length 22½ m., average breadth about 1 m., greatest depth 754 ft. See Fort Augustus.

Nesselrode, CHARLES ROBERT, COUNT (1780-1862). Russian diplomatist. Born at Lisbon, Dec. 14,



Nesselrode

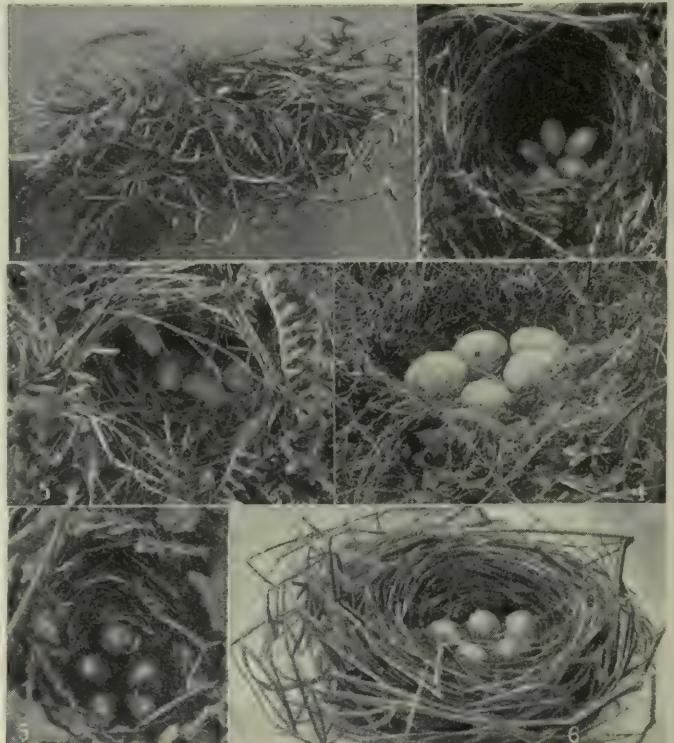
1780, he was the son of the Russian minister there. Educated partly in Berlin, he spent some time in the navy and then in the army, before entering the diplomatic service. He gained experience of unrivalled value, and also the friendship of Talleyrand and Metternich during the European negotiations, of which Napoleon was the central figure, between 1807 and 1811. He accompanied the Russian army that invaded France in 1814, and shared in the negotiations of 1814-15, including the congress of Vienna. He was the chief instrument of the tsar Alexander I in pressing forward in the policy of the Holy Alliance, being then minister for foreign affairs, a position he retained until 1856. Although Alex-

ander's successor, Nicholas I, did not always act upon his advice, Nesselrode was the most influential of Russian statesmen from 1816-55. He died March 23, 1862. His letters and papers were edited by A. de Nesselrode, 1904.

Nessler's Reagent. Alkaline solution of mercury and potassium iodide, employed as a test for ammonia, with traces of which it gives a yellow colour, and with larger quantities a brown precipitate. On account of the delicacy of the test it is adopted for detecting ammoniacal impurities in drinking water.

Nessus. In Greek mythology, one of the Centaurs. Having attempted to carry off Deianeira, the wife of Hercules, the latter shot him with a poisoned arrow. Nessus, when dying, gave Deianeira his infected cloak, declaring that it would win back the love of her husband, should he prove unfaithful. The jealous wife sent Hercules the cloak, which he put on, and died in fearful agony. See Centaur; Deianeira; Hercules.

Nest. Shelter constructed by an animal for the purpose of rearing its young. The nest-making



Nest. Various forms of nests built by common British birds. 1. Coot, floating on water. 2. Redstart, hole in wall or tree. 3. Willow warbler, on the ground among bracken. 4. Wild duck, under bushes or hedges. 5. Nightingale, built of dead oak leaves on grass, at the base of bushes. 6. Reed bunting, in small trees growing in swampy ground.

instinct is common to a large part of the animal world. Among mammals most of the rodents construct nests or nursing chambers, those of mice being familiar, and many of the insectivores have the same habit. Many fishes, e.g. the common stickleback, build nests. Among the insects bees, wasps, and ants construct elaborate nests in which to rear their larvae, and many spiders make nests of silk, in which the eggs are deposited and the young kept for a time.

Nest building has attained its highest development among the birds as a class, culminating in the wonderful constructions of the weaver birds and tailor birds. In the case of some of the gregarious birds, a huge structure is built which contains the individual nests of many pairs.

Generally the most elaborate nests are made by those species whose young are most helpless in the earlier stages of life. Where, as in the game birds, the young are able to run about and pick up food soon after being hatched, the nest is almost always on the ground, and is of very simple construction. Birds, such as the finches, which have many enemies, take the most pains to conceal their young, either by placing the nest in an inaccessible place, or by covering the outside with lichens or other material to match its surroundings. See Bird; Cassiques.

Neston. Dist. of Cheshire, part of the urban dist. of Neston and Parkgate. It stands on the estuary of the Dee, 12 m. from Chester, and is served by the G.C. Rly. and the joint line of the G.W. and L. & N.W. Rlys. The old church of S. Mary has some interesting memorials. Coal is mined in the neighbourhood. Pop. 4,600.

Nestor. In Greek legend, king of Pylos, who in spite of his years took part in the Trojan War, in which his counsel was highly valued. As a young man, he had taken part in several adventures, including the expedition of the Argonauts and the hunt for the Calydonian boar. He was one of the few Greek leaders to reach home safely after the fall of Troy. See Troy.

Nestorianism. Christian heresy which caused the Council of Ephesus in 431 formally to define the dual nature of Christ. It is named after Nestorius, consecrated bishop of Constantinople in 428, who, if he did not originate, formulated in somewhat hazy language the doctrine that the B.V.M. could not be called *Theotokos*, Mother of God, because not God, but only the temple in which

God dwelt, was born of Mary. In other words, he appears to have believed that in Jesus Christ there were two Persons and two Natures, that Christ's humanity was but the temple of His divinity, and that God the Son did not endure human suffering or go through human experiences. Nestorius was deposed, excommunicated, and banished to Egypt, where he died in 435. The heresy spread to Syria, Persia, India, Central Asia, and China, and communities in Mesopotamia, Kurdistan, and Malabar, India, preserve the name but not the heresy. See Eutyches; Monophysite; Theodore; consult also Nestorians and their Rituals, G. P. Badger, 1852; Lesser Eastern Churches, A. Fortescue, 1913.

Net. Openwork fabric of cord or thread knotted at each intersection. The making of nets is one of



Net-ball. Try for a goal, the ball bouncing from rim of net

the oldest and most wide-spread arts. Remains and paintings have been found of nets used by the Swiss lake-dwellers and the ancient Egyptians. The Chinese make very fine nets of silk, and the Eskimos use the sinews and strips of the skin of seals for making nets. Nets are used for catching fish and birds, for protecting fruit, for bags, in many games, etc. Fishing nets were formerly made of hemp, but are now largely made of cotton by machinery. The principal types of fishing nets are the seine, which is thrown from a boat and drawn back to the boat or to shore; the trawl, which is towed from a boat; the drift net, which drifts with the

tide; and the moored net, which is stationary. Wire netting is commonly used for the protection of garden produce from rabbits, etc., to fence in poultry and other domestic animals. For the net used in lace-making, see Lace.

During the Great War wire nets were used as anti-submarine defences at British, French, and Italian naval bases and harbours. A large establishment was organized at Shotley, near Harwich, for their production, at which 597 miles of nets, a dead weight of 105,150 tons, were turned out by naval labour. See Marine Biological Research; Submarine.

Net-ball. Outdoor or indoor pastime. Although generally played by women, net-ball may be played by either sex or by mixed sides. The ground, similar in shape to a hockey pitch, usually measures 100 ft. in length by 50 ft. in breadth, but may be varied according to the number of participants on either side, generally seven. Around the goals, which are fixed in the centre of the end lines, a semi-circle 16 ft. in radius, called the shooting circle, is drawn, and in the centre of the field a circle 4 ft. in diameter is marked, while the playing pitch is divided into three courts of equal size by lines drawn transversely to connect with side lines.

The goals are single upright posts, each fitted with an iron ring 15 ins. in diameter, placed horizontally 10 ft. above the ground and projecting 6 ins. from the post. Attached to the ring is a net, open at the bottom, through which the ball has to be passed to score a goal. The ball is an ordinary Association football, 27 ins. to 28 ins. in circumference.

The opposing teams at the start of the game, which is played in two periods each of 15 minutes' duration, unless otherwise arranged, line up in the field, the respective positions being goal-scorer, attack, attacking centre, centre, defending centre, defence, and goal-keeper.

The game is begun by one of the two umpires, each of whom controls half the playing field, bouncing the ball in the centre circle, while the opposing centres stand outside the circle with their backs to the side lines. It proceeds when one of the centres succeeds in catching the ball, which is then batted or thrown from one player to another, until it is received by one standing within the shooting circle, who then attempts to throw or bat it into the net.

Infringements of the rules, such as offside, two players of one side holding the ball at the same time

with both hands, carrying the ball, and the body foul, i.e. obstructing an opponent by interposing the body, are penalised in two ways, the first two by a free pass, and the last two by a free throw at goal to the side offended against. When the ball passes over either of the side lines, a throw-in is given against the side that caused the ball to leave the field.

In five and seven a side games defending players are adjudged to

be offside if they enter the attacking court, and attacking players if they enter the defending court. In nine a side games players leaving their own courts are offside.

Netherfield. Village of Nottinghamshire, England. It is 2 m. from Nottingham, and is served by the G.N. and Mid. Rlys., many of the inhabitants being employed on the railways. There are also factories connected with the lace and hosiery trades. Pop. 6,400.

drainage, directly or indirectly comprehended by the *Waterstaat*, are extensive, complicated, and for a great part concealed.

Every indyked area, of whatever size or level, the waters within which are constantly organized and controlled as a unit is called a polder. Much the greater part of the Netherlands is polderland. There are sea-polders and land-polders; and there are also *droogmakerijen*, lakes or meres drained of the water which had gathered after excavations of short peat.

The "Fen Colonies"

Dutch peat (*turf*) is of two kinds, hard (short) and loose, according as it originates in low or high fen. Some 20 p.c. of Netherlands is fen, the greater proportion of it low, and therefore in the maritime provinces. Both kinds of peat are everywhere being removed; short peat dredged and dried from the low fens, for example, and loose peat dug off large areas, as in the famous "fen colonies" of Groningen and Drenthe. The place of both is taken by green harvests.

PEOPLE, LANGUAGE, AND LITERATURE. This strange and relatively new country holds a population of 6,841,155 (1920). It is most sparse in Drenthe, the heath province and densest in N. and S. Holland, where are the largest cities.

Netherlanders are, in the main, Frisians, Saxons, and Franks, much intermingled, but still clearly showing the several types. Frisians, solid in Friesland, have mixed with Franks in the W. maritime provinces, and in a less degree with Saxons in Groningen; otherwise, broadly, the S. is Frankish, the E. Saxon. All three have a language in common, within which dialects vary. It is more akin to English than to German, and, like both, is a distinct Teutonic tongue. Frisian, also Teutonic, but unintelligible to the Dutch, has a considerable literature of its own, and Friesland is, to some slight extent, at least, bilingual.

Race and religion more or less coincide: the S., mainly Frankish, is almost solidly Roman Catholic; the N.W. and N. (Frisian and Saxon) are Protestant, but less solidly. The remaining provinces are Roman Catholic, speaking generally, in proportion to their Frankish admixture.

Like the Dutch tongue, but with a distinct evolution of its own, Dutch literature emerged in the 16th century from a battle of S. and N. elements. Two names, Roemer Vischer and Hendrick Spieghel, survive by their efforts to fashion and foster a literary vehicle. As in painting, so in letters, the

NETHERLANDS: HOLLAND OF TO-DAY

D. S. Meldrum, Author of *Holland and the Netherlands*

This account is supplemented by articles on Amsterdam. The Hague; Rotterdam; and other towns and cities of the Netherlands. See the biographies of Barneveldt; William the Silent; Witt; and other makers of the country, and those of its rulers and men of letters. See also Belgium; Dutch Art; Frisians; Holland; Zealand

The Netherlands is the modern kingdom known to the British as Holland, to the French as *Les Pays Bas*, and to the Dutch themselves as *Nederlând*. The name was common to the territory, the historical Low Countries, comprising present-day Holland and

provinces, where also are sandy tracts from 160 ft. to 325 ft. high. The remainder of the country, about 99 p.c. of the whole, is a comparatively recent alluvial or diluvial deposit, little of it exceeding 16 ft. above sea level, while much is below it, and even so far as 6 ft. below. This fact dominates the Netherlands in all its aspects.

Physically, it must be pictured as a great trough, the floor of which slopes down from E. and S.E. towards the North Sea in W. and N. The sea there would rush in and overwhelm this lower-lying area, but for a natural protecting rim of sand-dunes, artificially strengthened in places. Across this area the rivers flow to the North

Belgium, until the declaration of independence by the northern provinces in 1581. The history of the Netherlands and Belgium, thereafter, may be accounted separate. Holland for centuries designated that portion of the Netherlands now represented generally by the provinces of N. and S. Holland and sometimes Zealand. This restricted application still prevails locally.

Sovereign Rights in the Schelde

The modern Netherlands, composed of eleven provinces—Friesland, N. Holland, S. Holland, Zealand, Utrecht, Groningen, Drenthe, Overijssel, Gelderland, N. Brabant, and Limburg—is a country of approximately 12,580 sq. m., or 15,760 inclusive of its waters. It is bounded W. and N. by the North Sea, on the E. by Germany, and on the S. by Belgium. In the S.E. corner, Limburg runs down between Germany and Belgium, assuming special strategic and political importance in consequence. A strip of Zealand territory (*Zeeuwisch* or *Staats-Vlaanderen*) lying S. of the Schelde gives the Netherlands sovereign rights to that river; and her claim to extend these also to the Wielingen channel, W. of Flushing, was, in 1921, contested by Belgium.

In the S. of Limburg is the highest point (1,050 ft.) in the Netherlands. Other outcrops of older formations occur in the E.

Sea—Rhine (Lek), Meuse, Waal, Schelde being the chief—from the higher continent beyond. These rivers at their mouths are frequently below the level of the sea, into which they have to be lifted by canals and locks across the dune- or dyke-rim. In the past the sea has often rushed in with devastating effects, of which visible signs are the Zuyder Zee, washed out in floods of A.D. 1170, the Dollart, in 1277, and the broken coast-line of the Frisian, S. Holland, and Zealand islands. At all times, too, the precarious river levels threaten internal floods.

Problem of the Dykes

These physical conditions indicate a country faced with unique problems of defence works against the waters; and throughout historical times the Netherlands has, in fact, possessed a unique public department to cope with these problems. It is known as *Waterstaat*, or the state of the waters. The works of defence, reclamation, and



Netherlands arms



Netherlands flag; red, white and blue

17th century was the Netherlands' golden age, with the historian, Pieter Corneliszoon Hooft, the comic playwright, Gerbrand Adriaanszoon Brederoo, and the great Joost van den Vondel, its shining figures; beside whom stands the homely fabulist, Jacob Cats, popularly most influential at home and best known abroad. Of 18th century writers need only be mentioned Willem Bilderdijk; his flourishing time extended into the 19th, with the poets, Christiaan Starling (1767-1840), Hendrick Tollens (1780-1856), and Pieter Augustus de Genestet (1803-61), as contemporaries.

Literature and Journalism

A magazine, *De Gids*, founded early in the 19th century, was an inciting force to a revival of letters; just as, at the end of it (Oct., 1885), appeared *De Nieuwe Gids*, to be a rallying ground for young writers who have revolutionised Dutch literature. In the first group were the romantic and mystical poet, Everhard Johannes Potgieter (1808-75); the playful humorist, Nikolaas Beets ("Hildebrand," 1814-1903); historical romancers like Jacob van Lennep, Madame Bosboom-Toussaint, H. J. Schimmel, and Adèle Opzoomer, later; philosophical and critical writers like Carel Vosmaer (1826-88), who edited *The Spectator*, and Conrad Busken-Huet (1826-86); and in a place by himself, Eduard Douwes Dekker (*q.v.*).

The *Nieuwe Gids* band—with whom must be mentioned the pioneer of the modern lyric, Jacques Perk (1859-81), who was with it in spirit—included the poet, Willem Kloos, the poet and novelist, Marcellus Emants, and the leader of the naturalistic novel, K. J. L. Alberdingk Thijm ("Lodewijk van Deyssel"). With its claim for art as the most individual expression of the most individual emotions, it has since inspired many movements and reactions. The realistic dramatist, Herman Heijermans, the lyricist, Albert Verwey, Louis Couperus, and the poets, Herman Gorter and P. C. Boutens, are a few contributors to the copious and very "modern" literature which *De Nieuwe Gids* may be said to have initiated.

The press of the Netherlands is well informed and independent, and admirably free from sensation. The *Nieuwe Rotterdamsche Courant* and *Algemeen Handelsblad* of Amsterdam share journalistic efficiency with half a dozen others, and display a conspicuous excellence in their foreign correspondence and treatment of the arts. The great



Netherlands. Map showing the waterways and canals, and the administrative divisions of Holland

majority of readers are regular subscribers, a fact which consolidates the authority of newspapers as organs of political opinion; this is especially so in such cases as the *Tyd* (R.C.), *Standaard* (Anti-Revolutionary), and *Nederlander* (Old Conservative).

Language and Education

Bearing significantly on the literature, art, and culture generally of the Netherlands is the fact that its language is little known beyond its own frontiers. As a result an unusually large number of its inhabitants speak, read, write, and even become authors in foreign tongues. The newspaper racks in the cafés and the circulating portfolios of books and magazines in the houses give ample evidence of this command of languages. Hence the exotic influences manifest in native literature and art, and a tendency to run after strange gods in both; but hence, also, an increasingly remarkable efficiency in most Dutch activities.

Education is becoming increasingly practical, and gains much

from a zealous public interest. Attendance at school has been compulsory since 1900; the obligatory age is 6 to 13, and there is careful provision for continuation classes. Primary education is practically free, and, wherever necessary, entirely so. On the century-long contentions over the separation of religious and secular instruction a workable compromise appears to have been reached, at least temporarily, in accord with a marked preference by parents for private over public schools. It has long been the law that in private schools above infant grade, without any exceptions, those imparting instruction must pass the recurring and exacting tests imposed on teachers under public authority.

Under the head of intermediate education come innumerable professional, technical, trade, commercial, and industrial schools, and schools for special local and industrial needs. The provision is ample, and in most cases efficient. Among the first are the High (Higher Burgher) schools for both boys and girls; in some there is

co-education. The Higher Burgher schools vary in length and range of curriculum. A feature in many is the rigorous qualification test before the pupil is advanced a step; the Dutch boy or girl is educated under an exacting code, and failure reverts with some hardship on the parent. But the admirable result is undeniable that in the Netherlands education is taken very seriously indeed.

Schools and Universities

The old-established gymnasium, or grammar school, found in all large towns, has a higher education status as a gateway—one through which more and more women are passing—to the universities. Of these, the three historic state universities of Leiden, founded in 1575, Groningen, and Utrecht, and the municipal university of Amsterdam, which dates from 1875, have five faculties—law, medicine, theology, science and mathematics, literature and philosophy. The free university, Amsterdam, is Calvinist and private, but grants degrees in theology. The famous Technical School, Delft, now enjoys university status, as do the agricultural school at Wageningen, and the veterinary school at Utrecht. The universities are non-residential, and students' corps are a feature in their social life.

HISTORY. More than one date may be given for the beginning of the Netherlands as a nation. The struggle for liberty of conscience and freedom from unjust levies had been going on already for 15 years when, on July 29, 1581, Holland, Zealand, Utrecht, Gelderland, Brabant, Flanders, and Overijssel formally abjured the sovereignty of Spain. These United Provinces were not finally recognized by Spain herself until the treaty of Westphalia, Jan. 30, 1648, by which time Groningen and Drenthe had been included in the confederacy. The period just defined is that of the War of Independence.

The great figure in this drama of creating a new power and a new kind of power in Europe was William the Silent, prince of Orange. When he appeared upon the scene, a youth at the court of Charles V, all the provinces, both N. and S., had emerged from a state of flux, under their several counts and bishops, as possessions or fiefs of the Spanish crown, inherited from Burgundy and Austria. Orange, embracing Protestantism, headed the revolt in them against the folly and fanaticism of Philip II and his agents, Alva in particular. Then followed the capture of Brill in 1572 by the Beggars

of the Sea, the sieges of Haarlem, Alkmaar, and Leiden, and the other incidents of the struggle described by Motley.

After the assassination, in 1584, of Orange, the fight was continued by his two sons as stadtholders: Maurice, the born soldier, and the politically wiser Frederick Henry (d. 1647). The N. provinces issued from it as the powerful Dutch Republic—the Netherlands, or Holland, of to-day. The S. provinces remained the Spanish Netherlands, with their later history as modern Belgium.

The power of the new republic was a fact long before its enemies acknowledged it. For it the 80 years of war were a period of unparalleled advance, in the empire of the sea, the expansion of commerce, the exploitation of trade and industries, and in the arts of peace. The Dutch East India Co. was founded in 1602, the West India Co. in 1621. In 1609 was established the Bank of Amsterdam, pre-eminent among such institutions. With the opening of the 17th century the Netherlands had already passed from struggle and suffering into its golden age.

Religious and Political Dissension

But there was present in it a canker of religious and political dissension which ate into the rich body. The jealousies of the provinces were complicated by those of the towns. There were rival parties of union and secession, fierce contentions for peace and state rights as against war and central government. The quarrel between Maurice and John van Oldenbarnevelt, resulting in the execution of the latter (1619), signalled the strain of opposing forces, which had weakened the republic from the first, and were to cause its fall in the end. The Netherlands, by the immense effort of its earliest days, was left like a boy who has outgrown his strength. Next to its unique physical conditions, this "fatal flaw" in its constitution is the most significant fact in Netherlands history.



Netherlands. Map indicating distribution of the chief commercial products of the country

In 1641 Frederick Henry's son, William, married Mary, daughter of Charles I of England. This alliance consolidated the authority of the Orange family, entangled the provinces in the meshes of foreign politics, and during the minority of the third stadtholder William, commercial rivalry involved them in the first naval war with England (1652-54).

The third William's troublous minority saw further naval wars, in one of which De Ruyter entered the Thames in 1667, and the formation of the triple alliance between England, the United Provinces, and Sweden. But the prince's tutor, the grand pensionary John de Witt, could not prevent a disastrous renewal of war with France, and he and his brother Cornelis were murdered at The Hague by an Orange mob. Thereupon (1672) William was declared stadtholder. He proved a great general, and 1697 brought the peace of Ryswick. Meanwhile, in 1677, he had married Mary, daughter of James II of England; in 1689 he, with his wife, mounted his father-in-law's throne, and until his death in 1702 he was both William III of England and the third stadtholder.

The 18th century was for the Netherlands a period of steady decline. In the war of the Spanish succession (1702-13) the provinces shared Marlborough's victories, but were exhausted in the effort. An interregnum in the stadtholdership after the third William's death was followed in 1733 by the election

of a cousin, and this fourth William married (George II's daughter Anne. The peace of Aix-la-Chapelle (1748) left the Netherlands at a very low ebb of its fortunes. After eight years' regency of the widowed Anne (1751-59) her son William was elected stadtholder. The old feud of the states against the united power which the stadtholder symbolised was resumed by the patriot party, which, following the French Revolution, welcomed the French in their country (1794). William, fifth and last of the stadtholders, fled to England.

The period following (1795-1813), in which the Batavian republic took the place of the old, was one of French domination. Its successive stages were recognition of independence to 1805; dictatorship of Napoleon through the grand pensionary, Rutger Jan Schimmelpenninck, 1805-6; Louis Napoleon's reign as king of independent Netherlands, 1806-10; an-

Queen Wilhelmina married in 1901 Prince Henry of Mecklenburg, and their only child, Princess Juliana, became heir presumptive on her birth in 1909.

CONSTITUTION AND GOVERNMENT. The constitution of the Netherlands is the fundamental law of 1814, based on that of 1682, but modified to suit an hereditary monarchy and the inclusion of the southern provinces. It was altered on the separation of Belgium, 1830-31, and several times later, the last in 1917; and its further revision was discussed in 1921.

Crown and Council of State

The sovereign, whose person is inviolable, is head of army and navy; the executive power is his exclusively, and the initiative in war and treaty. Ministers, nevertheless, are always consulted; the progress towards democracy is greater in practice than in theory. There exists, to advise the crown, a resuscitated historic body, the council of state (*Raad van Staat*); it has the influence of its individual members, but cannot interfere directly with government. It has some slight judicial powers, but

its authority is confined to emergency. Another nominal link between the Netherlands present and past is the provincial states, now, except in respect of defence against river and sea, a purely administrative body. It is popularly elected, but not for political ends, although it, in turn, elects the senators.

Real legislative authority lies with the states-general. It comprises two chambers, the

first with 50 members, the second with 100. Members of the first, or senators, are elected by the provincial states, on a special qualification of taxable wealth mainly, for nine years, one-third retiring every third year. Expenses are allowed them, 16s. 8d. per day, during session. Their function is to advise or control, not to initiate, legislation. the introduction of amendments, however, is now permitted them.

The 100 deputies in the chamber, as the second is generally known, are (under the Reform Act, 1919) elected for four years by the votes of all citizens of both sexes who have reached 23, on a system of proportional representation. Deputies are paid £250 annually in addition to expenses.

The chambers meet in the historic Binnenhof in The Hague, separately, each under a president nominated by the crown, except for joint opening and closing sessions, or when specially called together by crisis. The sovereign can dissolve either chamber, or both at will; a new chamber must be formed within 40 days.

The departments of state are: home affairs; foreign; justice; finance; colonies; waterstaat; agriculture, commerce, and industry; war and marine (joint or separate); labour; education; each with a minister, generally possessed of a professional qualification for his post. Ministers are nominated by the sovereign, but are responsible to the states-general, of which they need not have been, and need not become, members. They appear in either chamber to defend government measures. It was an extra-parliamentary government which held office throughout the Great War.

Politics and Religion

Dutch politics have always been inseparable from religion. Both chambers show a Right composed of Roman Catholics and Anti-Revolutionists, with a few of the Protestant party, entrenched against Liberals and Socialists, aided by a few independents. The Anti-Revolutionists are a militant orthodox party, representing a powerful section in the country, created, or rendered articulate, by a leader of genius, Dr. Abraham Kuyper (d. 1920). Calvinists and Roman Catholics, historical foes, have for many years been in a successful "monstrous coalition" against advanced opinions of the Left, presumably generated by the French Revolution, from opposition to which they derive their name. In a House so small, with groups so numerous, stability for the government is precarious, and an inde-



nexation by France, 1810-13. In the last named year, after Leipzig, the people revolted and recalled the prince of Orange (the fifth William's son), not as their stadtholder, but as their sovereign. Thus the modern kingdom of Netherlands came into existence.

After the brief period (1815-30) and unhappy experience of union with Belgium, and the prolonged discussion of questions between the two countries, not closed till 1839, King William I abdicated in favour of his son, William II, who reigned until 1849. His son and successor, William III, lived until 1890, after which the queen-dowager, Emma of Waldeck Pyrmont, acted as regent until her daughter, Wilhelmina (b. 1880), ascended the throne in 1898.



Netherlands. Types from the country districts of Holland. 1. A Zeeland village schoolmaster. 2. Unmarried girls from Zeeland. 3 and 4. Old Gelderland peasants

pendent party develops the power of the casting vote, as is understood by the Socialists, who at the election of 1918 came 22 strong to the second chamber.

DEFENCE. Service in the army is partly compulsory, partly voluntary. Conscripts are chosen by lot. There is a *landweer* and a *landstorm*; the peace strength, including the former, was (1920) 270,000, with a trained 156,000 in reserve. Inundation in "Holland's Fortress" round the citadel of Amsterdam plays a large rôle in the scheme of defence. The army of the Indies is recruited and maintained as a separate force; while colonial defence falls mainly on the home navy.

JUSTICE. Courts of justice comprise cantonal (100), district (23), appeal (5), and the high court at The Hague, the judges being appointed by the sovereign for life. Civil and criminal cases are tried in all courts. The law of the Netherlands is embodied in the Code Napoléon. In each of the 1,110 communes there is a popularly elected council, which chooses aldermen (*Wethouders*) from its own number. They, with a burgomaster appointed by the sovereign, form the daily executive, with authority over the communal police.

One third of the land is permanent pasture, and intensive methods are largely used in horticulture as well as in agriculture. The Netherlands possesses no minerals except the coal of Limburg. Rotterdam, with an annual entry of over 4,000,000 tons, is the greatest port on the Continent. Amsterdam, the commercial capital, and its outport Ymuiden, or IJmuiden, have developed on the extensive trade done with the Dutch colonies. There is a crowded commerce of ships throughout the interior network of canals, the total extent of which is estimated at 2,000 m.; there are 3,000 m. of roads, 2,400 m. of rly., and 1,850 m. of tramways.

COLONIES. The Netherlands ranks third among colonial powers, its possessions having an area of 783,000 sq. m. and a pop. of 47,150,000. They fall into two groups, viz. East Indian and West Indian colonies.

The E. Indian colonies are Java and Madura, Sumatra, the Riau-Lingga archipelago, Banca, Billiton, Dutch Borneo, Celebes, the Moluccas and Dutch New Guinea, the Timor archipelago, Bali and Lombok. The European pop. is 140,000. Some districts are under native princes, others directly administered, and the whole is under a governor-general, assisted by a nominated council and a volks-

raad, or people's council, a certain control being exercised by the Netherlands parliament.

The W. Indian colonies are Dutch Guiana and Curacao. The Netherlands colonial empire owes its origin to the Dutch East India Company, formed in 1602, and dissolved in 1798, when its possessions passed to the state.

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Nethersole, OLGA (b. 1870). British actress. Born in London, Jan. 18, 1870, she made her stage



Olga Nethersole, British actress
Elliot & Fry

début at the Theatre Royal, Brighton, in Harvest, March, 1887, and appeared in London at the Adelphi Theatre, June, 1888. She toured in Australia, 1890, and at the Théâtre Sarah Bernhardt, Paris, 1907, played in La Dame aux Camélias and The Second Mrs. Tanqueray. She toured in America, 1910-11, and again in 1913. Joining the British Red Cross in 1916, she was attached to the Hampstead Military Hospital until the end of the war. She founded, and was hon. organizer of, the People's League of Health.

Néthou, PIC DE (Sp. *Aneto*).

Mountain peak of the Central Pyrenees, in the Maladetta group, between France and Spain. It is the highest point of the whole range, alt. 11,168 ft.

Netley. Village of Hampshire, England. It stands on the side of Southampton Water, 3 m. from Southampton, with a station on the L. & S.W. Rly. Here are

the extensive ruins of a Cistercian abbey, founded about 1239. In 1856 a military hospital, the Royal Victoria, was begun at Netley. It was opened in 1863 and became the largest in Great Britain, except only the temporary ones opened during the Great War. It has accommodation for 1,100 patients, and here candidates for the army medical service receive part of their training. Pop. 1,400.

Nettle (*Urtica dioica*). Perennial herb of the natural order Urticaceae. It is a native of the N. tem-



Nettle. Spray of foliage and flowers of common stinging nettle

perate regions, S. Africa, and the Andes. The creeping rootstock sends out runners, soon forming a large colony. The oval or lance-shaped, opposite leaves are downy and well furnished with stinging hairs; the edges strongly toothed. The flowers are small and green, the males being in separate, looser clusters than the females. A smaller annual species (*U. urens*) has smooth leaves with stinging hairs, and the clusters few-flowered. Another annual is the Roman Nettle (*U. pilulifera*), a coarser-looking plant, whose leaves, save for the stinging hairs, are also smooth. The Australian tree nettle (*U. gigas*) grows to a height of 100 ft. or more. Nettle-shoots in spring make a valuable pot-herb, and a green dye is obtained from the



Netley, Hampshire. Courtyard and main entrance to the Royal Victoria Military Hospital

Cribb, Southsea

leaves. Several species of nettle are employed in the manufacture of textiles and ropes.

Nettle-rash or **URTICARIA**. Affection of the skin which occurs in the form of wheals or raised patches, at first red and afterwards white and bloodless in the centre, but red at the edges. The condition is more frequent in children than in adults and in females than in males, and is more frequently seen in warm than in cold weather, probably owing to the greater frequency of eating decomposed food. Urticaria may be due to local irritation, such as stings of nettles, insects, jellyfish, etc.; to the eating of unsound food, particularly shell fish, tinned fish, and pork; to the taking of certain drugs such as copaiba; to intestinal parasites; or to indigestion, diabetes, jaundice, and other diseases.

If indigestion is suspected as the cause, a saline purgative should be given, and if there are signs of a disordered stomach a simple emetic is often useful.

Nettleship, HENRY (1839-93). British scholar. Born at Kettering, May 5, 1839, he was educated at



Henry Nettleship,
British scholar

Durham and Charterhouse Schools and Corpus Christi College, Oxford. He won a fellowship at Lincoln College and from 1868-73 was a master at Harrow. In 1878 he was appointed professor of Latin at Oxford, and there he remained until his death, July 10, 1893. A great admirer of German scholarship, he was a pioneer in the movement for introducing more critical study of the ancient texts. He gave much time to editions of Virgil, but his best and most original work is in his Contributions to Latin Lexicography, 1889. See his Lectures and Essays, with Memoir by his wife, 1895.

Nettleship, JOHN TRIVETT (1841-1902). British painter. Born at Kettering, Feb. 11, 1841, a brother



J. T. Nettleship,
British painter

of Henry Nettleship, he was trained as a lawyer, and studied art at Heatherley's and the Slade School, London. He exhibited his boldly conceived pictures at the R.A. and the Grosvenor Gallery, 1874-1901, making his studies at the Zoo-

logical Gardens; visited India in 1880; and died, after a long illness, in London, Aug. 31, 1902. He was an accomplished musician, and the author of a critical volume on Browning and of another on George Morland.

Nettle Tree (*Celtis australis*). Tree of the natural order Ulmaceae, native of S. Europe. The oval,



Nettle Tree. Leaves and fruit of the
S. European tree

lance-shaped leaves are alternate. The small, greenish flowers are succeeded by small, berry-like fruits, which are black when ripe and very sweet. In Greece they are known as honey-berries. The wood is dense and hard.

Netze. River of Germany and Poland. It rises W. of Inowroclaw, in Poznan (Posen), and flows generally W. to join the Warthe, which joins the Oder at Küstrin. Part of the middle course is along the new boundary between Poland and Germany. Its length is 200 m.

Neu-Brandenburg. Town of Germany, in Mecklenburg-Strelitz. Situated on Lake Tollense, 17 m. N.N.E. of Neu-Strelitz, it has old walls with four fine Gothic gates. The churches of S. Mary and S. John, a grand ducal palace, and the town hall are the principal buildings. There are distilleries and flour mills. It is an important rly. junction. Pop. 12,000.

Neu-Breisach. Town of France, in Alsace. Near the Rhine, opposite Breisach, and on the Rhine-Rhône canal, it was built in 1697

by the French after they had restored Breisach to the Hapsburgs. Vauban fortified it in 1703, and it was taken by the Germans in 1870. Pop. 4,000.

Neuburg. Town of Bavaria. Situated on the right bank of the Danube, it was formerly the

capital of the principality of Pfalz-Neuburg and place of residence of the prince. Pop. 9,000.

Neuchâtel. Lake of Switzerland. It runs N.E. and S.W., between the cantons of Fribourg and Neuchâtel, and touches those of Berne and Vaud. Its extreme length is 24 m., average breadth 4 m., alt. 1,427 ft., depth 500 ft., and area 92½ sq. m. The surplus waters of Lake Morat are carried to it by the Broye, while it discharges its own by means of the Thiele through the lake of Bienné to the Aar. The towns of Neuchâtel, Grandson, Yverdon, and Serrières stand on its banks.

Neuchâtel. Frontier canton of N.W. Switzerland. Traversed by the Jura Mts., it is bounded N.W. by France, N.E. by Berne, S. by Vaud, and S. and E. by the lake of Neuchâtel. It is divided into three regions, viz. Le Vignoble, bordering the lake, with an alt. of from 1,500 ft. to 2,300 ft.; Les Vallées, 2,300 ft. to 3,000 ft. and Les Montagnes, a valley in which stand La Chaux de Fonds and Le Locle.

In the lowest area the vine is cultivated, in the Val de Travers (*g.v.*) is a noted asphalt deposit. Cattle-rearing and cheese-making are engaged in. The manufactures are watches, electric appliances, and soft goods. The principality was under the kings of Prussia from 1707 to 1857, except for the period 1806-14, when it was French. In 1815 it entered the Swiss confederation, becoming a full member in 1857. Area, 312 sq. m. Pop. 133,400.

Neuchâtel (Ger. *Neuenburg*). Town of Switzerland, capital of the canton of Neuchâtel. It stands on the N.W. shore of Lake Neuchâtel, 27 m. by rly. W. of Berne.

Fine quays with handsome modern buildings line the lake shore, this new quarter having several public gardens. The old town, to the W., contains a castle



Neuchâtel arms



Neuchâtel, Switzerland. View from the west, looking towards the lake. On the right are the château and adjoining abbey

of the 12th century, with later additions; an abbey church, built in the 12th century, now used for Protestant worship; and a Renaissance market hall, erected in 1570. There are a university, museums, picture galleries, libraries, and many educational and philanthropic institutions. Neuchâtel has a considerable trade in wine, and manufactures watches, jewelry, and printed goods. The inhabitants are mainly French-speaking Protestants. Pop. 23,700.

Neue Freie Presse. Vienna's leading daily newspaper. Founded in 1864, before the Great War it was a prominent Liberal organ and regarded as an authority on finance. Its war policy was strongly pro-German.

Neufeld, CHARLES (b. 1856). German trader and contractor. A native of Damerau, E. Prussia, he



Charles Neufeld,
German trader

was educated at Königsberg and Leipzig universities. He left a trading business in Upper Egypt to join the British army of occupation in Alexandria, first as interpreter and then as a contractor; served in the Nile campaign, 1884-85; assisted later in the fortification of Assuan, and, being captured by Dervishes in 1887, remained a prisoner of the khalfia until the relief of Khartoum by Kitchener in 1898. He wrote *A Prisoner of the Khaleefa*, 1899; and *Under the Rebel's Reign*, 1900.

Neuhaus. Town of Czechoslovakia, in S. Bohemia, 23 m. S.E. of Tabor, now known as Jindřichuv Hradec. It contains two medieval churches, an old Jesuit college, and a Franciscan monastery. Pop. 10,000.

Neuilly, TREATY OF. Treaty signed at Neuilly-sur-Seine, Paris, between the Allied powers and Bulgaria, Nov. 27, 1919. By it Bulgaria ceded small portions of territory on its W. frontier to Yugo-Slavia and lost a large part of Thrace, on the Aegean Sea. The Dobruja, given to her by the treaty of Bukarest, 1918, was restored to Rumania, and in addition she had to demobilise her army, surrender all arms and munitions of war, and carry out certain reparations conditions. See Bulgaria; Dobruja; Greece; Rumania; Thrace.

Neuilly-sur-Seine. Suburb of Paris. Lying E. of the Avenue de Champs Elysées and N. of the Bois de Boulogne, it is entered at the

Porte Maillot and extends to the Seine. On the N. was a château of Louis Philippe, destroyed by the mob in 1848. Its midsummer fair is a great popular festival frequented by Parisians. Pop. 45,000.

Neu Langenburg OR NTUKUYU. Town of Tanganyika Territory, formerly German East Africa. The chief town of the district of Langenburg, it is situated near the frontier of N. Rhodesia, and N.W. of the head of Lake Nyasa. It was captured by Gen. Northey's Rhodesian and Nyasaland force in May, 1916, and Alt or Old Langenburg, 40 m. S.E. on Lake Nyasa, fell to him early in June. See East Africa, Conquest of.

Neumünster. Town of Prussia in Slesvig-Holstein. It is on the Schwale near Stör, 18 m. S.S.W. of Kiel, on the Altona-Kiel rly. Its chief industries are the manufacture of leather, paper, cloth, iron, and machinery, and there are breweries and locomotive works. The district, originally known as Wip Pendorp, derives its name from an Augustinian monastery, founded 1130, and transferred to Bordesholm in 1326. It became a town in 1870. Pop. 35,000.

Neussegge OR OSSEGG. Village of Bohemia. It lies at the foot of the Erzgebirge on the Biela, a tributary of the Elbe. A noted summer resort, it possesses a Cistercian monastery, founded 1192.

Neuquén. Territory in the W. of Argentina. It is bounded N. by the river Colorado and S. by the river Limay. Sloping E. from the Andean system, it is traversed by the river Neuquén, an affluent of the Rio Negro, and is almost wholly mountainous. There are several large lakes in the S. portion, including Nahuel-Huapi (q.v.). On the lowlands large numbers of cattle, sheep, and horses are reared. Chosmalal is the capital. Area, 40,530 sq. m. Pop. 28,900.

Neuralgia. Affection of the nerves. It may be a manifestation of a neurotic state, or due to debility, anaemia, exposure to cold, toxic influences, as in gout, diabetes, lead poisoning, malaria, etc., pressure on a nerve trunk from a tumour, or to reflex action from a source of irritation, such as a decayed tooth. Women are more often affected than men. An attack may begin with sensations of discomfort or tingling in the part affected, but often the pain comes on quite abruptly. It is usually very severe, and is described as stabbing, burning, or darting in character.

In the treatment of neuralgia the general health should be built up, and for anaemic or debilitated

patients a change of air is often necessary. Sufficient exercise in the open air and a generous diet are important. All sources of peripheral irritation, such as decayed teeth, should be looked for. Warmth applied by hot-water bags or heated layers of flannel to the affected part often relieves painful attacks. See Nervous System; Sciatica; Tic Douloureux.

Neurasthenia. Term used popularly to include all forms of neurotic disorder or neuroses (q.v.). Physicians, however, now restrict the term to one form of these disorders belonging to the group of the "actual" neuroses. Neurasthenia is essentially a form of nerve exhaustion, and may result from prolonged physical strain and hardship, or may be the result of long-continued overwork, especially if associated with business or domestic worries. The most characteristic symptom of neurasthenia is the extreme readiness with which the individual is fatigued by physical or mental effort. Other symptoms are sleeplessness, constipation, and sometimes pain in the back and limbs, irritability, and depression. The best form of treatment is mental and physical rest. In severe cases the Weir-Mitchell system (q.v.) may be adopted.

Neuritis. Inflammation of the trunk of a nerve. It may be localised in one nerve or may be multiple. Localised neuritis is most often due to exposure to cold, injury of a nerve, or extension of inflammation to a nerve from adjacent inflamed tissue. The symptoms are pain in the course of a nerve, and perhaps slight reddening and swelling of the part affected. The functions of the muscles supplied by the nerve are impaired, and there may be some loss of sensation in the skin to which the nerve is distributed. If the condition becomes chronic, there is ultimately extreme wasting of the muscles, with paralysis and possibly contractions.

Multiple neuritis may occur in the course of infectious diseases such as leprosy, diphtheria, and smallpox, may be due to poisoning by alcohol, lead, arsenic, mercury, and other substances, or may arise in the course of beriberi. In acute multiple neuritis there are constitutional symptoms, such as rise of temperature and headache, with pains in the limbs. Paralysis of the legs and arms appears, with rapid wasting of the muscles. Death may occur in the acute form, but most cases recover, though improvement may be slow and the paralysis may con-

tinue for a year or even longer. Alcoholic neuritis is the most frequent form of multiple neuritis.

In neuritis due to acute poisoning the outlook for recovery is usually good, but the prognosis in neuritis due to long-standing chronic lead poisoning is not hopeful. Rest is an essential feature of treatment, and in acute cases the patient should remain in bed. Hot applications may be used to relieve pain, and painting the part with menthol is often helpful. Strychnine, iodide of potassium, and salicylates have been recommended as internal medicines.

Neuromata. Tumours which develop on nerve fibres. True neuromata consist of nerve tissue; false neuromata of fibrous tissue. See Tumour.

Neuron. Nerve cell. A typical neuron consists of a cell body containing a nucleus, and various fine processes which break up into smaller branches called *dendrons*. In many cells one of the processes is of great length and forms a nerve fibre, which, with other fibres, constitutes a nerve. The nerve fibre itself ultimately breaks up into small branches which are distributed to muscle, skin, or other tissues.

Neuroptera (Gr. *neuron*, nerve; *pteron*, wing). Order of carnivorous insects. They have biting jaws, four stiff and unfoldable, net-veined wings, more or less transparent, and long antennae. The genus *Boreus* is wingless. They undergo complete metamorphosis in their development from the larva to the adult state. The British representatives include seven families and fewer than 60 species, of which familiar examples are the alder-flies, the snake-flies, the lacewings, and the scorpion-flies. Not one of them is injurious to man or his property.

Neurosis. Disorder of the mind not associated with any recognizable organic changes, and distinguished from insanity by the fact that it affects chiefly the emotions, and leaves the reasoning powers relatively unimpaired. There are, however, borderline cases in which it is difficult to diagnose between a neurosis and the early stage of some forms of insanity. Knowledge of these disorders has been advanced during recent years, owing mainly to the work of the Viennese physician, Sigmund Freud.

Psychopathologists now classify neurotic disorders into two main groups, according to their mode of origin, namely the "actual" or "true" neuroses, and the psychoneuroses. The essential difference between these sub-groups is that the cause of the actual neuroses

can be traced ultimately to some physical disturbance, whereas the psychoneuroses have a purely mental origin and are the last links in a chain of mental processes. The actual neuroses are three in number, namely neurasthenia, anxiety neurosis, and hypochondriasis. Anxiety neurosis is characterised by sudden attacks of acute fear which occur without any cause, and which the patient himself recognizes as being entirely unreasonable. Those who suffer from this disorder have frequently not been able to find a satisfactory outlet for their emotions, either as a result of social circumstances or deliberate suppression. An understanding of the cause of the condition is very helpful to them.

The psychoneuroses are hysteria, psychasthenia, and obsessional neurosis. These conditions are caused by a conflict between the conscious and subconscious parts of the mind. Despite his civilization, man still shares with the lower animals many fundamental biological tendencies and desires. The gratification of these desires is often in direct conflict with the social teaching and the moral and ethical code to which the individual has been obliged to conform from early childhood. The result is that these wishes are either never allowed to reach consciousness or, if they do, are at once repressed by the individual. Freud has shown that in the development of the instincts, the child passes through a series of phases before the normal condition of maturity is reached.

The exigencies of civilization demand that everyone must experience this process, and most people go through it successfully, i.e. they make the suppressions and repressions which are necessary to fit them to their environment. Sometimes, however, the suppression is not complete, or the subconscious desire tends to become too strong for the inhibiting forces. The result is that symptoms appear which represent a compromise, and it is these which constitute the psychoneuroses. Treatment consists in investigating the patient's mind and ascertaining the fundamental nature of the conflict which, unknown to himself, is occurring. This process is called by Freud psychoanalysis.

Additional light on the causation of the psychoneuroses has resulted from an investigation of the symptoms, often spoken of as "shell shock," which were displayed by a large number of men following exposure to danger or subjection to terrifying experiences during the Great War. The view has been put

forward that these symptoms arose as a result of the conflict between fear and the obligations imposed by duty. When under fire the natural impulse urges flight. Discipline and social training preclude this, and the result is a conflict between the social instinct, or instinct of the herd, and the instinct of self-preservation. See Dream; Freud; Hysteria; Psychoanalysis.

W. A. BREND, M.D.

Neuruppin or **RUPPIN.** Town of Prussia, in the prov. of Brandenburg. It is on the lake of Ruppiner See, by which it is connected with the Elbe. Laid out by Frederick William II after the great fire of 1787, it has a synagogue and a 13th century church, once that of an abbey, which was restored in the 19th century. Its chief industries are the manufacture of cloth, brushes, and machinery. Pop. 19,000.

Neusalz. Town of Prussia. It is in the prov. of Silesia, on the Oder, 75 m. N.W. of Breslau. It has two Protestant churches, two private schools, and a district court. It has a trade in flax, enamel, cartons, glue, and machinery, etc., and there are saw mills, breweries, and boatbuilding yards. Pop. 13,000.

Neusatz or **NOVI SAD.** Town of Yugo-Slavia, formerly in Hungary and known as Ujvidek. It stands on the Danube, opposite Peter-*varad*, and is 175 m. by rly. S. from Budapest on the main line to Belgrade. It is the seat of a bishop of the Greek Church, and is the centre of a rich farming district. Here the Franz-Joseph Canal joins the Danube. There is considerable river traffic. Pop. 33,600.

Neuse. River of North Carolina, U.S.A. Rising in the N. portion of the state, it flows 300 m. S.E. to Pamlico Sound, which it enters on the W. side by a wide estuary about 35 m. long. It is navigable for vessels of light draught for nearly 70 of its 300 m.

Neusiedler See. Lake of Central Europe. It is crossed by the new frontier between Austria and Hungary, and is known to the Magyars as Fertő. The lake is so shallow that its size fluctuates, and in 1865 it dried up completely. The E. side is low and marshy and surplus waters flow away here by the Rábnitz to the Raab and Danube. When the bed is exposed remnants of lake dwellings are visible. The swamps at the S.E. end have been partially reclaimed.

Neusohl. German name of the Hungarian town of Besztercebánya (q.v.).

Neuss. Town of Prussia. It is near the left bank of the Rhine, with which it is connected by the Ert

Canal, 4 m. S.W. of Düsseldorf. There are manufactures of machinery, textiles, hides, woollen, and leather goods. Neuss has Roman remains. The beautiful church of S. Quirinus, founded in 1209, is a remarkable example of the transition from the round to the pointed style of architecture. Pop. 30,000. See Camp.

Neustadt. Town of Bavaria, Germany. It is known as Neustadt-an-der-Haardt to distinguish it



Neustadt, Bavaria, arms

from other places of the same name, which means, in English, new town. It stands beneath the Haardt Mts., in the Bavarian Palatinate, 14 m. from Spire. The town hall was formerly a Jesuit college. In the Middle Ages there was an abbey here, and the abbey church, a Gothic building of the 14th century, which still stands, contains the remains of several of the electors palatine. Neustadt is the centre of a wine-producing district, and has manufactures of paper, cloth, and tobacco. It is also a railway junction. On a hill above are the ruins of a castle, once a residence of the electors palatine, and near is the Maxburg, a castle built by the emperor Henry IV. Pop. 20,000.

Another Neustadt is a town of Silesia. It stands on the river Prudnik, 60 m. from Breslau. It has manufactures of textiles, leather, beer, etc.; also dye works. Pop. 18,900. Other places of this name are in West Prussia, 24 m. from Danzig; in Saxe-Coburg-Gotha, 9 m. from Coburg; and in Saxony, 20 m. from Dresden.

Neu Strelitz. Town of Germany, the capital of Mecklenburg-Strelitz. It is situated amid woods, between two lakes, 60 m. N.N.W. of Berlin. It was built in 1733 in the form of an eight-rayed star, in the centre of which is the market place, containing a bronze statue of the grand duke George, erected in 1866. The palace, used until 1918 by the dukes, is built in the Doric and Roman styles of architecture; it contains a library of over 100,000 vols., and a fine collection of coins and antiquities. Chiefly an agricultural centre, Neu Strelitz has a trade in woollens, timber, machinery, and iron, and is connected by canal with the Havel and the Elbe. Pop. 12,000.

Neustria. Name given to a Frankish kingdom which had an independent existence in the 4th-8th centuries. It was so called because at the time it was the newest



Neuss, Prussia. West facade and tower of the Church of S. Quirinus

conquest of the Franks. It was the western of two kingdoms, Austrasia being the eastern one, and it was, roughly speaking, bounded by the Seine, the Loire, and Brittany. After the union of the two kingdoms in the 8th century, the word Neustria remained for some time in use, but the district to which it applied was never exactly defined.

Neutitschein. Town and dist., formerly in the Moravian prov. of the Austrian empire, now known as Jižín Nový (*q.v.*).

Neutrality. Term used in international law to denote the condition of a state when there is a war, and that state is not at war with either belligerent. It dates from the 15th century. The duty of a neutral, put generally, is to abstain from taking any real part in the war, on either side; but there is nothing to prevent a neutral from doing something which will, even inevitably must, strengthen one of the belligerents. Thus, a neutral must not, when a place is besieged, introduce supplies into that place, because that would be interfering with a military operation; but he may carry on general commerce with either or both the belligerent states, even to the extent of supplying them with munitions of war, as the U.S.A. supplied the Allies throughout the Great War.

On the other hand, by long usage, a belligerent has the right to seize, on the high seas, any munitions of war belonging to a neutral, and to stop and search neutral ships for that purpose. A neutral ship which evades or resists such visits and search may be treated as an enemy. A neutral ship which tries to break a blockade is liable to capture. A neutral state must not allow belligerent ships of war

to use its harbours except under stress of weather, and then not to replenish its armed stores. A belligerent must not march its troops into or through neutral territory; and if soldiers of a belligerent, to escape capture, or even by mistake, overstep the border of a neutral state, the latter ought to compel them to surrender, and to intern them until the end of the war, and such troops are bound to surrender if called upon. In 1780 and 1800, during the naval wars, the Baltic Powers proclaimed an "armed neutrality." They set up the doctrine of "free ships, free goods"; that is, that goods carried in neutral ships, even contraband, should not be liable to capture; thus incidentally destroying the right of visit and search contended for by Great Britain. The Baltic ships were formed into convoys, protected by ships of war; but Great Britain carried her point; and visit and search is now recognized as the law of the sea in time of war. See Angary; Contraband; International Law.

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Neuve Chapelle. Village of France, in the dept. of Nord. It is 4 m. N. of La Bassée (*q.v.*) and 8½ m. S.W. of Armentières, lying slightly south of the Armentières-Béthune road. It is at the junction of several roads, one to La Bassée in the south, and another from Béthune on the west to Armentières on the N.E. Seized by the Germans in Oct., 1914, it was retaken in that month by the Indian corps. The British line was later withdrawn west. It was the immediate objective in the battle of that name, March, 1915. The village was practically destroyed in the war. It has been "adopted" by Blackpool.

Neuve Chapelle, BATTLE OF. Fought between the British and the Germans, March 10-12, 1915. In March, 1915, Sir John French determined on an attack on the German front, to prevent the dispatch of German reinforcements to the eastern front, and to assist the French at Arras. The point selected was Neuve Chapelle, a village N. of La Bassée, taken by the Germans in 1914.

The battle as planned was to consist of an assault on Neuve Chapelle by the 4th corps (Rawlinson) on the N. and the Indian corps (Willcocks) on the S., while two holding attacks were simultaneously to be delivered, by the

3rd corps (Pulteney) S. of Armentières, and the 1st corps (Gough) at Givenchy. Though the British supply of munitions was inadequate, by the strictest possible economy sufficient had been accumulated for a violent 40-minute artillery preparation which, it was hoped, would wipe out the German trenches. The date fixed for the attack was March 10, and before it the Royal Air Force had secured superiority in the air. British artillery, including new 15-in. howitzers, had been concentrated during March 8 and 9, undetected by the Germans. This section of the front was held by the 6th German army (Prince Rupert of Bavaria).

The British guns opened at 7.30 a.m. of March 10, a cold and misty morning, after preliminary shots necessary to secure correct registration. The preliminary firing alarmed the Germans, who opened a heavy fire on the crowded trenches, but this was almost immediately followed by the roar of 480 British guns, which for 35 minutes poured in a storm of projectiles on the hostile positions. At the same time the airmen bombed the rly. bridges and junctions to the rear of the German front, and set one of the German headquarters on fire. At 8.5 the guns lengthened their range, to put down a barrage behind the German line, and the infantry advanced.

On the front of the Indian corps the artillery preparation had been satisfactory; attacking the S.E. corner of Neuve Chapelle village, its troops found the German trenches destroyed and the wire cut. They carried four lines of trenches, consolidated the position, and searched the houses for snipers and machine guns, while the British artillery lengthened its range to interpose a barrage between the village and the German rear. N. of



Neuve Chapelle. Map of the country between Armentières and La Bassée, showing the disposition of the British forces just before the battle of March 10-12, 1915

the village British troops attacked and found in most places the German trenches and wire intact. Their losses were heavy, but Neuve Chapelle was won, and by 11 a.m. all resistance there had ceased.

To carry out the purpose of the command it was necessary to use to the utmost the opportunity which the surprise of the Germans had given, and to push E., driving a deep wedge into the German front. Unfortunately, in the critical hours of the battle, the reserves of the 4th corps were late in arriving, owing to defective staff work. Communications between the British front line and the rear broke down. Telephone wires were cut by the German artillery, while the German machine guns enfiladed the new British positions.

At 3.30 p.m. the 4th corps reserves were on the ground and the three brigades of the 7th division attempted an advance towards Aubers and Piétre, while Indian troops on the S. attacked the Bois du Biez. But at both points the Germans were strongly posted, and the British artillery fire had produced little effect. The advance came to a standstill, and the British entrenched, having gained

about a mile of ground and cleared the Neuve Chapelle salient. Orders were issued to renew the attack on the 11th, but did not reach all the troops, and the attack by units of the Indian corps was beaten back with heavy loss. On March 12 the German reserves arrived and a number of counter-attacks were delivered by them, but without gaining any ground.

The British casualties in the battle were 2,527 killed, 8,533 wounded, and 1,751 missing, a total of 12,811. The German losses, including 30 officers and 1,657 men taken prisoners, may have been almost as large, as, on the section of front captured by the Indian troops, 2,000 dead were counted.

Neuve Église. Village of Belgium, in the prov. of W. Flanders. It is 3 m. S.W. of Messines (*q.v.*). The centre of a network of roads, it was an important British position in the Ypres salient in the Great War. It came into prominence in the German offensive against Ypres, April, 1918, being gallantly defended by remnants of the 25th division, April 12-13. It was subsequently lost, but retaken by the 33rd and 49th divisions. A party of the 2nd Worcesters made an heroic stand in the Mairie against a German attack on April 14. The village was reduced to ruins in the fighting. A war memorial has been erected here.

Neuville, ALPHONSE MARIE DE (1836-85). French painter. He was born at St. Omer, May 31, 1836.



Alphonse de Neuville, French painter

In 1861 his *Chasseurs of the Guards* took a second-class medal at the Salon, and was followed by a series of military pictures, the artist supporting himself meanwhile by making woodcuts for the illustrated press. His pictures of the outstanding incidents of the war of 1870-71 made him the best-known military artist in Europe, *The Last Cartridge*, 1873, and *Attack on a Barricaded House at Villersexel*, 1874, being notable. He died in Paris, May 20, 1885.

Neuville-St. Vaast. Village of France, in the dept. of Pas-de-Calais. It is 6 m. N. of Arras and was prominent in the Great War, being the scene of fighting between the Germans and the French. It was the centre of mining operations, and was stormed by the French on June 8, 1915. Its site was almost obliterated. See *Artois*, *Battle of*; *Carency*; *Souchez*.

Neuville-Vitasse. Village of France, in the dept. of Pas-de-Calais. It is 4 m. S.E. of Arras. It was prominent in the Great War, being captured after heroic efforts by the 3rd London regt. and 8th Middlesex (56th div.), April 9, 1917. Recaptured by the Germans in their spring offensive of 1918, it was regained by the British in Aug. of that year. This village, along with the ruined town of Vieille-Chapelle (N.E. of Béthune), has been "adopted" by the London borough of Paddington, as they had associations with men of that locality in the war. See Arras, Battles of; Vimy.



Neuwied, Germany. Palace formerly belonging to the princes of Wied

Neuwied. Town of Germany, in the Rhine prov. of Prussia. It is 8 m. from Coblenz on the right bank of the Rhine, where it is joined by the little river Wied. The chief building is the palace, once the residence of the princes of Wied, which stands in a large park. The chief industries are iron-founding and the making of starch, sugar, tobacco, etc. A feature of the place is the Moravian colony, to one of whose schools here George Meredith was sent as a youth. In the little county of Wied, Neuwied was founded by one of the counts in 1653, and was made their residence. There had been a village here previously named Langendorf. Pop. 20,000.

Neva. River of N.W. Russia, in the govt. of Petrograd. Rising in Lake Ladoga, it flows S.W., then N.W. through Petrograd, and, dividing into several branches, discharges itself into the Bay of Neva in the Gulf of Finland. It is an important commercial waterway, the final link in the communication between Petrograd and the White and Caspian Seas. Length 45 m.

Nevada. Western state of the U.S.A. Lying almost entirely within the Great Basin, its surface (mean alt. 3,750 ft.) is marked by numerous small mt. ranges and "sinks," or marshy tracts of land converted at times into large lakes; many of the valleys which separate the mt. ranges are from 10 m. to 20 m. broad. The principal river is the Humboldt, whose direction

is followed by the Southern Pacific Rly.; its course ends in the Humboldt and Carson "sinks." Mining is the chief industry; gold and silver are worked. There is a university at Reno. The rlys. have a total length of 2,310 m. Carson City is the capital, but there are no large centres of population.

Nevada was part of the territory taken from Mexico in 1848. It became a state of the U.S.A. in 1864, and sends two senators and one representative to Congress. For local affairs the state of Nevada has a legislature of two houses. Its area is 110,700 sq. m. Pop. 98,800, of whom 5,000 are Indians.

Nevada City. City of California, U.S.A., the co. seat of Nevada co. A health resort, 165 m. N.E. of San Francisco, it is served by a narrow gauge rly. Its buildings include the co. court house and a Carnegie library. The district is rich

in gold, and mining, agriculture, and dairy farming are carried on. Settled in 1849, Nevada City was incorporated in 1851, reincorporated in 1856, and again in 1875.

Nevers. City of France. It stands where the Nièvre falls into the Loire, 32 m. from Bourges and 160 from Paris, and is the capital of the dept. of Nièvre. The cathedral of S. Cyr was begun in the 11th century and finished about 1500. It was originally two buildings, and is Romanesque at one end and Gothic at the other. The church of S. Étienne is noteworthy. The castle in which the counts and dukes of Nevers lived is now the palais de justice and a museum. It was built in the 15th century, replacing an earlier edifice. Of the city's fortifications a tower remains. There are a town hall, a triumphal arch, and a number of old houses in the steep and narrow streets. The industries include potteries, tanneries, oil mills, iron-foundries, and the making of boots and shoes.

Nevers began as a Roman settlement. About 500 a bishopric was founded here, and about 1000 the counts of Nevers appeared, the county being known as the

Nivernais. At one time in possession of the dukes of Burgundy, it was made a duchy about 1530. The last duke, a member of the family of Mazarini, died in 1798. Pop. 27,700.

Neviansk or **NEVIANSKI ZAVOD.** Town of E. Russia. It is in the govt. of Perm, stands on the Nieva and the Ekaterinburg rly., 45 m. N.W. of Ekaterinburg. There are iron-foundries and smelting works, and gold is found. Pop. 18,000.

Nevill, LADY DOROTHY FANNY (1826-1913). British writer. She was born in London, April 1, 1826, daughter of Horatio Walpole, third earl of Orford (1783-1858). In 1847 she married her cousin Reginald Nevill (d. 1878), and became known as a hostess. She was author of *Mannington* and the *Walpoles*, earls of Orford, 1894; *Reminiscences*, 1906; *Leaves from the Note Books of Lady Dorothy Nevill*, 1907; *Under Five Reigns*, 1910; and *My Own Times*, 1912. She died March 24, 1913.

Her third son, Ralph Henry, was educated at Eton and Magdalene College, Cambridge, served in the diplomatic service, and was attached, 1916-19, to the intelligence department of the Admiralty. In addition to his *Life and Letters of Lady Dorothy Nevill*, 1919, he wrote *The Merry Past*, *The Romantic Past*, *The Man of Pleasure*, *London Clubs*, *Echoes Old and New*, *Floreat Etona*, etc.

Neville. Name of an English family. Founded in the 12th century, it was connected with Durham, Northumberland, and Yorkshire. Ralph (d. 1367), 2nd baron, defeated and captured David Bruce at the battle of Neville's Cross, 1346. Another Ralph (1364-1425) became earl of Westmorland and married a daughter of John of Gaunt; while his daughters



Lady Dorothy Nevill, British writer
Elliott & Fry



Nevers, France. Gothic east end of the cathedral of S. Cyr

married leaders of the Yorkist and Lancastrian parties. Ralph's grandson Richard, earl of Warwick, was the greatest figure in the family. Charles (1543-1601), 6th and last earl of Westmorland, took part in Northumberland's rebellion of 1569, was attainted, and forfeited his estates, including Raby Castle (*q.v.*). Junior branches of the family hold the titles of Abergavenny and of Braybrooke (*q.v.*).

Neville's Cross, BATTLE OF. Fought between the English and the Scots, Oct. 17, 1346. During the absence of Edward III on campaign in France, David, king of Scots, invaded and ravaged the north of England. The English nobles, with the archbishop of York, marched to repel the invasion, and the two armies met at Neville's Cross, a landmark on an eminence near Durham. The English archers opened the fight, and in the event the Scots were defeated with heavy loss, their king being among the prisoners.

Nevin or NEFFYN. Watering-place of Carnarvonshire, Wales. It is on Carnarvon Bay, 6 m. N.W. of Pwllheli. In the 13th century it was a fairly important place, as in 1284 Edward I held a festival here to celebrate the conquest of Wales, and at one time it was a corporate town. Early in the 19th century plans were drawn up for making Nevin, and not Holyhead, the port for Irish traffic. Pop. 1,800.

Nevinson, CHRISTOPHER RICHARD WYNNE (b. 1889). British painter. Born in London, Aug. 13, 1889, a son of H. W. Nevinson, he was educated at Uppingham, studied art at the Slade School and in Paris, and in 1910 began to exhibit at the New English Art Club and the London



C. R. W. Nevinson,
British painter
Russell

Group, where his daring experiments in cubism attracted attention. Joining the British army in 1914, he was in the Mons retreat. Discharged in 1916, he was appointed an official artist with the British armies in 1917. An exhibition of his works at the Leicester Galleries, London, 1918, showed modifications of his early manner.

Nevinson, HENRY WOODD (b. 1857). British author and journalist. The son of G. H. Nevinson, of Leicester, he was educated at Shrewsbury School and Christ Church, Oxford, and became a journalist. In 1897 he acted as cor-

respondent for The Daily Chronicle in Greece and Crete, and was afterwards in S. Africa. He was in Africa, 1904-6, investigating the horrors of the slave trade in Portuguese territory, and in Russia in 1906. For The Daily Chronicle he was with the Bulgarian army in 1912, and other countries

he visited included Morocco, India, and Spain. On the outbreak of the Great War, Nevinson was in Berlin, and for a time in France, after which he acted as war correspondent in Gallipoli, Salonica, and Egypt. A champion of social reform, women's suffrage, and all advanced movements, his works include *Lady-smith, 1900*; *The Dawn in Russia, 1906*; *The New Spirit in India, 1908*; *Essays in Freedom, 1909*; *The Dardanelles Campaign, 1918*.

Nervis. Loch or arm of the Atlantic Ocean in the S.W. of the co. of Inverness. It is a typical Scottish sea loch, 14 m. in length, and from 1 to 4 m. wide. See Ben Nevis.



H. W. Nevinson,
British author
Elliot & Fry

Nevis. Island of the British West Indies, one of the Leeward group. It lies 2 m. S.E. of St. Kitts, with which and Anguilla (*q.v.*) it is administratively joined. Its maximum length is 8 m., breadth 4 m., and area 50 sq. m. Roughly circular in outline, it is composed of one volcanic mt., which rises to an alt. of 3,596 ft. There are mineral springs near Charlestown, the port and capital on the S.W. coast. Cotton, sugar, cocoa, limes, vanilla, oranges, and coconuts are produced. Discovered by Columbus in 1498, Nevis was colonized by the English in 1628. Pop. 13,000.

Nevski Prospekt (Russ., Neva Street). Main thoroughfare of Petrograd, and the centre of the commercial life of the city. Among the numerous important buildings on its line of route are the Kazan cathedral, the Duma (town hall), and the Gostinny Dvor, a two-storeyed block of houses containing some 400 shops. See Petrograd.

New Albany. City of Indiana, U.S.A., the co. seat of Floyd co. It stands on the right bank of the Ohio river, 4 m. N.W. of Louisville, and is served by the Chicago, Indianapolis, and Louisville and other rlys. It has motor vehicle,



C. R. W. Nevinson. A Group of Soldiers, one of the artist's characteristic impressions of fighting men at the front during the Great War

By permission of the artist

leather, iron, engine, boiler, and furniture industries, and meat-packing houses. Organized as a town in 1813, it became a city in 1839. Pop. 23,000.

New Amsterdam. Town of British Guiana, S. America. It stands near the mouth of the river Berbice, at its junction with the Canje, 65 m. by rly. S.E. of Georgetown. Rice is grown in the surrounding districts. It was founded by the Dutch, who constructed a system of canals connecting various parts of the town. The houses are mostly built of wood. Pop. 9,000. New Amsterdam was the name originally given by the Dutch to the settlement on Manhattan Island, which became New York City in 1664.

Newark. Mun. bor. and market town of Nottinghamshire, England. It is on the Devon, near its



Newark arms

union with the Trent, and is connected with the main course of that river by a short canal. It is 19 m. from Nottingham and 120 from London, with stations on the Mid. and G.N. Rlys. The chief building is the church of S. Mary Magdalene. There is a grammar school dating from 1529, town hall, corn exchange, hospital, and free library. The Beaumont Cross is a fine piece of 15th century work.



Newark, Nottinghamshire. Ruins of the gatehouse and walls of the historic castle in which King John died

Frith

Newark is the centre of a large agricultural district, and holds an important corn market. The industries include, the making of machinery and plaster, iron and brass founding, brewing and malting, while gypsum and limestone are worked in the neighbourhood. Annual fairs are held. The castle, built in Anglo-Saxon times, and rebuilt in the 12th century, was the scene of John's death in 1216. It was held for the king during the Civil War until it surrendered to the Scots in 1646. Then demolished, the remains include the Norman gatehouse and a tower. In 1549 Newark was made a chartered town, and from 1673 to 1885 it was separately represented in Parliament. Market day, Wed. Pop. (1921) 16,957

Newark. City and port of entry of New Jersey, U.S.A., the metropolis of the state and the co. seat of Essex co. It stands on the Passaic river, 9 m. by rly. W. of New York, and is served by the Pennsylvania and other rlys., also by electric rlys. to towns in the neighbourhood, and by steamers. Among the public buildings are the city hall, county court house, and Roman Catholic cathedral.

An important industrial city, Newark has manufactures of jewelry, leather, chemicals, cutlery,

brass and iron products, boots and shoes, clothing, and glass. Originally known as Milford, it was settled in 1666 by a colony from Connecticut, and became a city in 1836. Pop. 414,500.

Newark. City of Ohio, U.S.A., the co. seat of Licking co. It stands on the Licking river, 32 m. E. of Columbus, and is served by the Pittsburg, Cincinnati, Chicago, and St. Louis and other rlys., and by the Ohio Canal. Its chief manufactures are glass, cigars, boots and shoes, electric cars, machinery, engines, flour, and chemicals. The Baltimore and Ohio Rly. has works here. Settled in 1801, Newark was incorporated in 1813. Pop. 26,700.

Newark, LORD. Courtesy title borne by the eldest son of Earl Manvers. In 1796 Charles Meadows, heir of the last duke of Kingston, was made Baron Pierrepont and Viscount Newark, and later he was created Earl Manvers. From 1661 to 1790 there was a Scottish title of Lord Newark. This was bestowed upon the soldier, David Leslie, and became extinct in 1790. See Leslie,

David; Manvers, Earl.

Newark Series. Geological name for the Triassic system in the E. part of N. America. The rocks consist of isolated areas of red sandstones, conglomerates, and breccias. In N. Carolina and Virginia the series contains coal seams, while the sandstone of Connecticut and New Jersey is a valuable building stone.

Newbattle. Parish and village, Edinburghshire, Scotland. It is on the South Esk river, 1 m. S. of Dalkeith. Newbattle Abbey, a seat of the marquess of Lothian, occupies the site of a Cistercian abbey, founded in 1140 by King David I. Pop. 6,100.

New Bedford. City and port of entry of Massachusetts, U.S.A., the co. seat of Bristol co. It stands on the Acushnet river, whose mouth expands into a commodious harbour, 55 m. S. of Boston, and is served by the New York, New Haven, and Hartford Rly., and by a series of steamers. New Bedford is an important cotton centre, and other manufactures are silk, cut glass, machine-shop and foundry products. Its once famous whale fishery is now almost extinct. New Bedford was incorporated in 1812, and became a city in 1847. Pop. 121,200.

Newbery, JOHN (1713-87). British publisher. Son of a Berkshire farmer, he became part proprietor of The Reading Mercury in 1737. In 1740 he set up a publishing business, which he moved to London in 1744, issuing The Universal Chronicle or Weekly Gazette in 1758, and The Public Ledger in 1760. Johnson, Goldsmith, Smollett, Christopher Smart, and Dr. Dodd wrote for him, and he is described in Goldsmith's The Vicar of Wakefield. Newbery, who made a feature of children's books, including Giles Gingerbread and Goody Two Shoes, was also a patent medicine vendor. He died Dec. 22, 1767. See A Bookseller of the Last Century, C. Welsh, 1885.

Newbolt, SIR HENRY JOHN (b. 1862). British writer. Born June 6, 1862, son of the Rev. H. F.



Sir Henry Newbolt,
British writer
Russell

Newbolt, he was educated at Clifton College and Corpus Christi College, Oxford. In 1892 he published a novel, Taken from the Enemy, and in 1897 a slender volume of verse, Admirals All. The poems therein and his later verse, contained in The Island Race, deal mainly with the deeds of British seamen, an example being the popular Drake's Drum. From 1900-4 Newbolt edited The Monthly Review. His later work includes two novels, The Old Country, 1906, and The New June, 1909; while after the war came Submarine and Anti-Submarine, 1918, and A Naval History of the War, 1920. In 1915 he was knighted, and made C.H., 1922.

Newbolt, WILLIAM CHARLES EDMUND (b. 1844). British divine. Born at Somerton, Somerset, Aug.

14, 1844, the son of the Rev. W. R. Newbolt, the vicar there, he was educated at Uppingham and Pembroke College, Oxford. Having been ordained, he served as curate of Wantage before becoming, in 1870, vicar of Dymock. In 1887, having been for a year vicar of Malvern Link, he was appointed principal of Ely Theological College, and in 1890 canon residentiary of S. Paul's. He has written several volumes, including Years that are Past, 1921.



Canon Newbolt,
British divine
Russell

New Brighton. Watering-place of Cheshire, part of the county borough of Wallasey. It stands on the Mersey, 4 m. from Birkenhead, in the Wirral peninsula. It has a station on the Wirral Rly., and is connected by ferry steamers with Liverpool and Birkenhead. There is a fine promenade and a park, where amusements are provided. See Wallasey.

New Brighton. Part of New York City, U.S.A. Formerly a separate town, on the N.E. shore of Staten Island, it was incorporated with Richmond, one of the New York boroughs, in 1898. See New York City.

New Brighton. Borough of Pennsylvania, U.S.A., in Beaver co. It stands on the Beaver river, 29 m. N.W. of Pittsburgh, and is served by the Pittsburg and Lake Erie Rly. New Brighton was organized as a town in 1815, and incorporated in 1838. Pop. 9,400.

New Britain or NEW POMERANIA. Island of the Bismarck Archipelago (*q.v.*). It is separated from the E. coast of New Guinea or Papua by Dampier Strait. Its length is about 300 m., and its breadth narrows to 10 m.; its area is about 10,000 sq. m. The coasts are low and fertile, but the interior is mountainous and includes several volcanoes, some active. The highest point is the Father, alt. 7,500 ft. Well wooded, and with rich vegetation, it has a heavy rainfall and a moist, warm climate. Its N. projection, the Gazelle Peninsula, is the best known part, and contains the former German settlement and port of Herbertshöhe, renamed Kokopo (*q.v.*). There are numerous plantations under rubber, coffee, and cotton. The natives are Melanesians, and the white settlers number about 300. It was occupied by the British in 1914. The capital is Rabaul.

New Britain. City of Connecticut, U.S.A., in Hartford co. It is 10 m. S.W. of Hartford, and is served by the New York, New Haven, and Hartford Rly. The chief buildings are the state normal school and the R.C. cathedral. New Britain is noted for hardware. Settled in 1687, it was incorporated in 1850, and became a city in 1871. Pop. 59,300.

New Brunswick. Maritime prov. of the Dominion of Canada. It is bounded N.W. by the prov. of

Quebec, W. by the U.S.A., and on the other sides by the sea, except where the narrow isthmus of



New Brunswick arms

Chignecto separates it from Nova Scotia. The surface is undulating, the only flat region lying along the E. coast. In the N. are a number of low spurs of the Appalachians. The deeply indented coast, which includes Chignecto and Miramichi Bays and the estuary of the St. John, has many fine harbours. Grand Manan and Campobello islands, both fishing centres, lie off the coast. The longest river is the St. John, others being the Miramichi, Restigouche, forming part of the N. boundary, St. Croix, and Petitecodiac. Grand Lake is the largest of the lakes.

Much of New Brunswick is covered by forests, in which moose and caribou are found, and lumbering and the making of wood-pulp are important industries. The soil is fertile; wheat, oats, barley, and

other crops are raised, cattle are reared, and there is some dairy farming. Iron, coal, gypsum, oil, and other minerals are mined, and natural gas exists. There is a large fishing industry and ample water power. The Intercolonial Rly. serves the prov., and both the C.P.R. and the G.T.R. pass through it. St. John is the largest town, others being Fredericton, the capital, and Moncton.

The prov. is represented in the Dominion Parliament at Ottawa by 10 senators and 11 members of the House of Commons. For controlling local affairs there is a parliament of one house, its 48 members being elected for five years. Responsible to this is a ministry under a premier, and the departments include those of education, agriculture, land, etc. The towns and rural districts have elected bodies to manage their own affairs. Until 1892, when the legislative council was abolished, the parliament consisted of two houses.

New Brunswick was settled by the French in 1604. Settlers from England and Scotland arrived



New Brunswick. Map of the Canadian maritime province lying between Quebec and Nova Scotia

about 1762, but the province really dates from the end of the American War of Independence, when many loyalists from the U.S.A. made their homes here. In 1784 it was separated from Nova Scotia and made into a distinct prov. It was given a representative assembly, but it was not till 1848 that this obtained any control over the executive council. In 1867 New Brunswick became one of the provinces of the Dominion of Canada. Between 1871 and 1875 there was an educational difficulty in the province. The Roman Catholics objected to the establishment of public undenominational schools, and, while the system was maintained, certain concessions were made to them in 1875. Its area is 27,985 sq. m. Pop. 352,000. See Canada.

New Brunswick. City of New Jersey, the co. seat of Middlesex co. It stands on the Raritan river, at the head of navigation, 30 m. S.W. of New York, and is served by the Pennsylvania Rly. and the Delaware and Raritan Canal. It contains Rutgers College, and has manufacturing interests, the chief products being motor vehicles, cycle and motor tires, rubber boots, medical and surgical appliances, and cigars. Settled in 1681, New Brunswick was incorporated in 1736, and became a city in 1784. Its present name was given to it in 1714, to celebrate the fact that a member of the house of Brunswick was king of Great Britain. Pop. 32,800.

New Brunswick, UNIVERSITY OF. Educational centre at Fredericton, N.B. It was founded in 1859 to take over King's College, an establishment dating from 1800. The government of the prov. controls its working. Strong in applied science, especially engineering and forestry, it has laboratories, museums, an observatory, and a library.

Newburg. Name of several towns and villages in the U.S.A. The largest, 6 m. S.E. of Cleveland, Ohio, with iron and steel industries, has been incorporated into the neighbouring city. Another is situated on the Ohio river, 10 m. E. of Evansville in Indiana. It is in a noted tobacco-growing district, and has industries connected with coal and coke. Another Newburg is 13 m. E.N.E. of Grafton in West Virginia. Others are in Maine, 15 m. W.S.W. of Bangor; in Pennsylvania, 6 m. N.N.W. of Shippensburg; in Wisconsin, on the Milwaukee river, 33 m. S.E. of Ford do Lac; and in Missouri, in Phelps co., on the St. Louis and San Francisco rly.

Newburgh. Royal and mun. burgh and seaport of Fifeshire, Scotland. It stands on the Firth of Tay, 11 m. from Perth, with a station on the N.B. Rly. There is a town hall, and the industries include fishing and the manufacture of floorcloth, linen, etc. There is some shipping, for which there is a small harbour. The property of the abbots of Lindores, Newburgh was made a burgh in 1266. The ruins of the Benedictine abbey of Lindores, founded in 1178, outside the town, can still be seen. Market day, Thurs. Pop. 2,000.

Newburgh. City of New York, U.S.A., in Orange co. It stands on the right bank of the Hudson river, 58 m. N. of New York city, and is served by the Erie and West Shore rlys. and by steamers. The chief products are cotton, woollen and silk goods, soap, tools, paper, furniture, boilers, pumps, and shirts. Shipbuilding and a trade in coal and agricultural produce are carried on. Washington's headquarters, a stone structure, is now a museum. The American army was disbanded here in 1783, and a victory tower commemorates the termination of the war. Settled in 1709, Newburgh was incorporated in 1800, and became a city in 1865. Pop. 30,400.

Newburgh, EARL OF. Scottish title now borne by the family of Giustiniani-Bandini. The first holder was the royalist Sir James Livingston, created viscount in 1647 by Charles I, and earl in 1660 by Charles II. His son Charles died without sons in 1694, his heiress being his daughter Charlotte, whose husband, a Radcliffe, claimed the title and estates of earl of Derwentwater. Their son James became the 4th earl of Newburgh. When the 5th earl died in 1814 there was no direct heir. Prince Giustiniani, a Roman noble, had married the heiress, and their son ranks as the 6th earl, although he did not claim the title. It was, however, granted to his daughter Maria after 1857, when she became naturalized as a British subject. She married Charles, Marquess Bandini. In 1908 Charles, duke of Mondragone (b. 1862), became the 9th earl. His eldest son's courtesy title in Britain is Viscount Kynnaid.

Newburn. Urban dist. of Northumberland, England. It is on the Tyne, 6 m. from Newcastle, with a station on the N.E. Rly. The old church of S. Michael was restored in the 19th century. Near is the Roman wall, and Roman remains have been found here. There are coal mines in the vicinity; other industries are the making of

machinery, tools, and fireclay, and there are also iron and steel works. Pop. 17,200.

In Aug., 1640, there was a skirmish here. At issue with Charles I, the Scots sent an army of 25,000 men into England. When they reached Newburn they found the ford there guarded by a body of royalists. On the 28th, after a cannonade, the latter, much inferior in numbers, fled, and the Scots crossed the Tyne.

Newbury. Mun. bor. and market town of Berkshire, England. It stands on the Kennet and the Kennet and Avon canal, 17 m. from Reading and 53 from London. It is a junction on the G.W. Rly., and the terminus of a light rly. The church of S. Nicholas was rebuilt by John Smallwood, called Jack of Newbury, who led 150 men to Flodden and died in 1519. The Cloth Hall is now a museum, and there are some old almshouses and an old grammar school.

Newbury is the market town for a considerable area around. It holds yearly an important market for sheep, while malting, brewing, and milling are carried on. There are establishments for training racehorses, and six race meetings are held here during the year. The town includes Speenhamland, and near are Shaw House, an Elizabethan residence, and the remains of Donnington Castle. In spite of its name, Newbury was a borough in the 12th century. It became prosperous owing to the expanding trade in wool, but soon after 1600 this began to decline. The corporation was reformed under the Act of 1835. Market day, Thurs. Pop. 12,100.

Newbury, BATTLES OF. Fought during the Civil War, Sept. 20, 1643, and Oct. 27, 1644.

The parliamentary army under the earl of Essex, about 15,000 strong, was returning through Wiltshire to London, after the relief of Gloucester. To cut it off the king arrayed his army at Newbury, while Rupert and the horsemen had skirmishes at Aldbourne Chase and elsewhere. Essex, however, reached Enborne, a village 3 m. from Newbury, and on the downs between this place and Newbury, with the Kennet to the N., the fight took place. It began with a series of royalist attacks, but the London train bands would not give ground, and elsewhere the parliamentarians stood firm against repeated assaults, making good use of the hedges, which were plentiful. When darkness came on the royalists, with their ammunition exhausted, fell back, and Essex, left in possession

of the ground, was able to continue his march. The most notable death was that of Lord Falkland.

In Oct., 1644, the royalist army was operating around Oxford, and the parliamentary forces were sent to engage it. They found the king with about 10,000 men near Newbury, with the rivers Kennet and Lambourn in front of him, and on his flank Donnington Castle, one of his strongholds. The plan of the parliamentarians was for a flank attack. One section, after a long circuitous march, carried out its part of the programme by capturing the village of Speen in the rear of the main royalist position, but the others did little, and night fell without any decision having been reached.

Newburyport. City and port of entry of Massachusetts, U.S.A., the co. seat of Essex co. It stands on the S. bank of the Merrimac river, 37 m. by rly. N.E. of Boston, and is served by the Boston and Maine Rly. It has a safe and spacious harbour. George Whitefield is buried in the old South Church. Settled in 1635, Newburyport was incorporated in 1764, and became a city in 1851. Pop. 15,600.

New Caledonia. French island in the South Seas. It is 1,077 m. from Sydney, is 250 m. long and 35 m. wide, with an area of about 6,500 sq. m. Two parallel ranges cross the island and culminate at 5,570 ft.; the numerous rivers are of little use for navigation. The average annual rainfall is about 40 ins., but much of the island is bare or poor savannah. A fringing reef encircles the island, the inner lagoon being of great use for navigation. There are coffee and cotton plantations, cattle runs, orchards, and vineyards. Nickel of high quality, cobalt, chrome, coal, gold, and other minerals occur; some ore is smelted at Noumea. Native Kanakas are the chief labourers. Pop. 50,000.

Discovered by Capt. Cook in 1774, the island became French in 1853. From 1864-95 it was a penal settlement, and the remaining convicts are now kept in the islet of Nou, opposite Noumea, the capital. The Isle of Pines, Loyalty Islands, Huon Islands, Chesterfield Group, Walpole Island, and Mato Island are neighbouring dependencies. Surprise Island in the Huon group yields phosphate, and Walpole Island guano. The Wallis archipelago, N.E. of Fiji, and Futuna and Alaï to the S. of this group, are more remote dependencies. The colony is administered by a governor, assisted by a privy council and an elected council-general. See Oceania.

Newcastle. Market town of co. Limerick, Ireland. It is 24 m. from Limerick. Pop. 2,400. There are a number of other places of this name in Ireland, these including baronies in counties Dublin and Wicklow, and villages in counties Tipperary, Meath, and Galway.

Newcastle. Watering-place of co. Down, Ireland. It stands on Dundrum Bay, 11 m. S.W. of Downpatrick, and 36 m. from Belfast, and is served by the G.N. of Ireland and Belfast and County Down Rlys. Amid magnificent scenery, it is visited for its bathing and golf. There are no remains of the castle built in the time of Elizabeth. Pop. 1,800. See Ireland.

Newcastle. Town of Australia, in New South Wales. It stands at the mouth of the Hunter river 102 m. by rly. N.N.E. of Sydney, on the largest coalfield in Australia. Between the town and Catherine Hill Bay the coal seams are exposed in the sea cliffs. The original settlement followed the discovery by Shortland of coal near the mouth of the Hunter in 1796. Pop. 61,000.

Newcastle. Town of Natal, S. Africa. It stands on the Incardu river at the foot of the Drakensberg, 197 m. from Pietermaritzburg and 160 from Durban, with which it is connected by rail. It is the centre of a coal-mining district, and stands at an alt. of 3,750 ft. The buildings include town hall and public library. During the Boer War of 1880-81 it served as the British base, and here peace was signed. In the S. African War, 1899-1902, its position on the border of the Transvaal again made it important. The Boers occupied it in their invasion of Natal in Oct., 1899, and it was not regained by the British until June, 1900. Pop. 3,700 (2,100 whites).

New Castle. City of Indiana, U.S.A., the co. seat of Henry co. It stands on the Blue river, 45 m. by rly. E. by N. of Indianapolis, and is served by the Pittsburg, Cincinnati, Chicago, St. Louis and other rlys. It lies in an agricultural district and manufactures iron and steel, furniture, motor-vehicles, clothing, and pianos. Pop. 14,500.

New Castle. City of Pennsylvania, U.S.A., the co. seat of Lawrence co. It stands at the confluence of the Neshanneck and Shenango rivers, 49 m. by rly. N.W. of Pittsburg, and is served by the Baltimore and Ohio and other rlys. Manufactures include steel and iron, tin-plates, pottery, cement, chemicals, hosiery, machinery, and tires. Newcastle was settled in 1812, and chartered as a city, 1869. Pop. 44,900.

Newcastle, DUKE OF. British title borne by the family of Pelham-Clinton. It is taken from Newcastle-under-Lyme. The first duke was the soldier, William Cavendish, who, in 1665, was made duke of Newcastle-upon-Tyne. His son Henry, the 2nd duke (d. 1691), left no sons, so the title became extinct, but in 1694 it was revived for Henry's son-in-law, John Holles, earl of Clare (d. 1711).

He, too, left no sons, and his estates passed to a nephew, Thomas Pelham, who was made duke of Newcastle-upon-Tyne in 1715, and duke of Newcastle-under-Lyme in 1756. He was the associate of the elder Pitt. When he died in 1768 his earlier dukedom became extinct, but the newer one passed to a nephew, Henry Fiennes Clinton, 9th earl of Lincoln, a title dating from 1572, whose descendants still hold it. Henry, the 5th duke (1811-64), sat in the House of Commons as earl of Lincoln, 1832-51. He was first commissioner of woods and forests, 1841-46; chief secretary for Ireland, 1846; secretary for war and the colonies, 1852-54; and for the colonies only, 1859-64. In 1879 Henry (b. 1864) became the 7th duke. The duke's seat is Clumber, Nottinghamshire. His estates include part of the city of Nottingham. His eldest son is called the earl of Lincoln.

Newcastle, WILLIAM CAVENDISH, 1st DUKE OF (1592-1676). English royalist. Son of Sir



William Cavendish, 1st Duke of Newcastle
After Van Dyck

Charles Cavendish of Welbeck, Nottinghamshire, he was made earl of Newcastle by James I, 1628. A friend of Charles I, he raised troops against the Scots in 1639,

and had tutorship of Prince Charles, 1638-41. In 1642 he raised the siege of York, besieged Leeds, April, 1643, and in June defeated the parliamentarians at Adwalton Moor. Marquess in 1643, he was relieved by Prince Rupert at York, and, after fighting at Marston Moor, left England and lived in poverty in the Netherlands until after the Restoration, 1660. He was recompensed by several royal offices and the dukedom, 1665, and died Dec. 25, 1676. He wrote plays and two works on horsemanship, 1658 and 1667. He married in 1645 Margaret Lucas (d. 1673). See A Cavalier and His Lady: Selections from the works of the 1st Duke and Duchess of

N., ed. E. Jenkins, 1872; *The First Duke and Duchess of Newcastle*, T. Longueville, 1910.

Newcastle, THOMAS PELHAM-HOLLES, 1st DUKE OF (1693-1768). English statesman. Son of Thomas,



Thomas Pelham-Holles, 1st Duke of Newcastle
After Hoare

1st Lord Pelham, he was born July 21, 1693, educated at Westminster and Cambridge, and succeeded his father in 1712. A supporter of George I's accession, he was made earl of Clare, 1714,

and duke of Newcastle, 1715. In 1724 he joined Walpole's cabinet, and continued to hold office, save during the winter of 1756-57, until superseded by the earl of Bute in May, 1762. On the death of his brother, Henry Pelham (q.v.), he was first lord of the treasury, 1754-56. Under his second premiership, 1756-62, Pitt was his war minister. Lord privy seal under Rockingham, 1765-66, he died in London, Nov. 17, 1768.

Newcastle Daily Chronicle, THE. Morning newspaper, established at Newcastle-upon-Tyne, May 1, 1858. Under the control of Joseph Cowen it became an influential Liberal organ with markedly independent views. The weekly issue, from which it sprang, and in which W. C. Adams started the Dicky Bird Society, was founded by Thomas Slack, March 24, 1764; the evening issue began Nov. 2, 1835; and a companion daily pictorial paper in 1910.

Newcastle Emlyn. Urban dist. of Carmarthenshire, Wales. It is mainly on the left bank of the Teifi, 9 m. from Cardigan, with a station on the G.W. Rly. Across the river is Cardiganshire. The ancient Dinas Emlyn, it was a Roman station, and was called Newcastle-in-Emlyn when a castle was built here. Of this only a few traces are left. Pop. 900.

Newcastle-under-Lyme. Mun. bor. and market town of Staffordshire, England. It stands on Lyme



Brook, 16 m. from Stafford, and is served by the N. Staffordshire Rly. The buildings include the modern town hall and the church of S. Giles, rebuilt, save only the tower, in the 19th century. The high school was founded in 1662; on

the same foundation are two other schools. In the vicinity are large collieries and potteries, while other industries include the making of clothes and paper, brewing and malting. There are chemical and fustian works. In the 12th century a castle was built here, and as it was near the forest of Lyme the name arose. It soon became a place of importance, and in 1590 was made a chartered town. It was formerly noted for its manufacture of hats. From 1353 to 1885 it sent two members to Parliament. Market days, Mon. and Sat. Pop. 20,200.

Newcastle-upon-Tyne. River port, city, and co. of a city in the county of Northum-



Newcastle-upon-Tyne arms

berland. It is the centre of a large coal-mining, shipbuilding, industrial, and agricultural area, and stands 8 m. from the sea, on the N. bank of the Tyne. Geographically it is the natural outlet for much Northumbrian agriculture. To facilitate shipping, etc., the Tyne Commission undertook from 1861 onwards its great work of deepening and improving the river. Newcastle's main expansion has been to the E. and W., owing partly to the transport facilities of the river. Its industries, apart from coal and shipbuilding, include engineering works, electrical works, and power distribution, chemical industries, grindstones, and the manufacture of lead and of copper alloys. There are markets for corn, hay and straw, cows, fish, vegetables, etc.

Six bridges cross the river, viz. High Level, 1846-49; Swing, 1876; Redheugh; Scotswood suspension; Scotswood (railway); and King Edward VII (railway). Of bridges crossing the valley of the Ouseburn, Byker Bridge, the railway bridge, and Armstrong Bridge are conspicuous. Open spaces and parks

are extensive, e.g. Town Moor, (927 acres), Nuns Moor, Castle Leazes, Leazes Park, in the N.; Jesmond Dene, Armstrong Park, Heaton Park, in the E. and N.E.; Elswick Park in the W.

S. Nicholas' Church, a cathedral since 1882, is on the site of an earlier church of 1091, which was rebuilt 1172-78, but burnt down 1216; the rebuilding was completed 1350, and the lantern tower added about 1450. S. Andrew's and S. John's contain parts dating from the 12th century. Other conspicuous churches are: All Saints, S. George's, S. Matthew's, and S. Mary's R.C. Cathedral. The Great Tower, or keep, of the Castle, and the Black Gate, 1247, and its museums, are held by the Society of Antiquaries.

The university of Durham has faculties represented by the College of Medicine, and by Armstrong College. Schools include Rutherford College, Royal Grammar School, Central High School, Newcastle High School, Allan's Endowed Schools, S. Cuthbert's R.C. Grammar School, etc. Music is fostered by the Newcastle and Gateshead Choral Union and numerous other societies. Musical tournaments are now held annually. The Institute of Mining Engineers, the N.E. Coast Institute of Engineers and Shipbuilders, the Society of Antiquaries, the Classical Association, the Historical Association, etc., watch over other interests. The public libraries contain nearly 200,000 books, MSS., etc.; the Art Gallery (1904) has loan exhibitions; the Literary and Philosophical Soc. (1793) has its library, lecture hall, etc., near the Central station. Its History, by Spence Watson, 1897, illuminates local life. The Royal Infirmary, 1906, replaces the old infirmary, 1752. Trinity House (hall, chapel, almshouses) is in Trinity Chase, off the Quay-side. Under the British League of Help scheme, Newcastle "adopted" Arras in 1920.

Four members are returned to Parliament. The chief magistrate is styled, since 1906, lord mayor. The mayoralty dates back at all events to 1252; the shrievalty to 1400. The old government of Newcastle was dissolved in 1835. There are 19 aldermen and 57 councillors.



Newcastle-under-Lyme, Staffordshire. Ironmarket, one of the principal thoroughfares

Newcastle became a point on the Roman Wall when Hadrian, A.D. 120, built his bridge (Pons Aelii) and camp. The town, however, had no importance until William I's sons established the fort known, from 1080, as the New Castle. The Scots held it during Stephen's reign, but Henry II recovered it, built a castle, the keep of which still remains, and granted a charter. King John confirmed the charter in 1201, and added the right to have a merchant guild, 1216. Strong new walls and towers, parts of which still remain, were built in Edward I's reign.

In 1320 Newcastle became the northern staple port for wool. By 1342 the newer trade and craft guilds had won a share in the town's government; fifty years later the Fraternity of Trinity House was established, which lighted and buoyed the Tyne, and exacted shipping dues. By the charter of 1400, Newcastle became a county in itself, and Elizabeth's great charter of 1600 confirmed the old privileges and added new ones. Meanwhile the coal trade, both home and foreign, had greatly expanded. In the Civil War, Newcastle favoured the royalists, and in 1644 was besieged and captured by the Scots. The shipbuilding trade added to Newcastle's prosperity; as also, from the 17th to the late 19th century, did glass-making. Pop. 274,955. See Tyne. Basil Anderton

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Newcastle-upon-Tyne, Northumberland, and part of Gateshead. Plan of the central districts of the city

Welford, 1885-87; Newcastle Town: its Rise and Progress, R. J. Charlton, 1885; Comprehensive Guide to Northumberland, W. W. Tomlinson, 1909; Handbook to the Roman Wall, J. C. Bruce, 6th ed. 1909.

Newchurch. Village of Monmouthshire, Wales. It is 7 m. from Usk, and consists of E. and W.

Newchurch. Near are the remains of a large British camp and the ruins of a castle.

Newchwang OR YINGKOU. Treaty port in Fengtien (Shengking) prov., China. It was opened to foreign trade in 1858. Though formerly on the Gulf of Liao-tung,

Newchwang is now situated on the Liaoho, 14 m. upstream. It is connected with the S. Manchuria Rly., linking Mukden and Dairen, and with the Peking-Mukden Rly. Newchwang is ice-bound for three months in the year. Its commercial position has been challenged by the opening of Antung and the development of Dairen. There is a large volume of traffic by junks on the Liaoho. Pop. 70,000.



Newcastle-upon-Tyne. 1. Grey Street, a busy thoroughfare, looking towards the memorial column to the 2nd Earl Grey. 2. Black Gate, the 13th century entrance to the castle. 3. West front of the cathedral of St. Nicholas. 4. Keep of the castle built by Henry II, 1172-77

New College. College of Oxford University. It was founded in 1379 by William of Wykeham, as the college of S. Mary of Winchester, but soon became known as New College. It was intended for boys from Winchester College, and this connexion has been maintained, scholarships being still reserved for scholars from Winchester. Five of its fellowships are held by professors known as Wykeham professors. Its head is the warden. The college, one of the largest and richest in the university, has a beautiful garden, bounded by the city wall. There are a large hall, cloisters, and a tower. The fine chapel contains the pastoral staff of the founder, and stained



New College, Oxford, arms

glass by Sir Joshua Reynolds. New buildings face Holywell Street. The college maintains a choir school. New College, Hampstead, a theological training centre for Congregational ministers, is affiliated to London University.



New College, Oxford. Front quadrangle, showing, left, the hall and muniment tower

glass by Sir Joshua Reynolds. New buildings face Holywell Street. The college maintains a choir school.

New College, Hampstead, a theological training centre for Congregational ministers, is affiliated to London University.

Newcomb, SIMON (1835-1909). American astronomer. Born March 12, 1835, in Nova Scotia, he went



Simon Newcomb, American astronomer

to the U.S.A., 1853, and in 1857 took part in calculating the tables of the American nautical almanac. Made in 1861 professor of mathematics in the navy, he was secretary of the

transit of Venus commission 1871-74, director of the nautical almanac, 1877-97, and professor of mathematics at Johns Hopkins University, 1884-94. His revision of the lunar and planetary tables resulted in the

revision and simplification of the nautical almanacs of the world. He made many observations of Uranus and Neptune through the 26-in. equatorial telescope of the U.S. naval observatory. He published a number of memoirs on the motions of the moon, the planets, asteroids, etc., and received the gold medal of the Royal Astronomical Society, the Copley Medal of the Royal Society, etc. He died July 11, 1909. See his autobiography, *Reminiscences of an Astronomer*, 1903.

Newcomen, THOMAS (1663-1729). English engineer. He was born and lived at Dartmouth, and with the financial help of John Colley or Cawley, about 1710, he built a steam engine (the first beam engine) to pump water at Dudley, Warwickshire.

Newcomes, THE. Novel by W. M. Thackeray, published in 1855, with the full title *The Newcomes: Memoirs of a Most Respectable Family*, edited by Arthur Pendenis, Esq. It was issued first in monthly parts, illustrated by Richard Doyle. A study of middle-class social life in the first half of the 19th century, it includes a number of autobiographical touches, and contains, in Colonel Newcome, one of the best remembered of Thackeray's characters.

New Corinth. Town of Greece. It was founded in 1858, 3 m. from the site of ancient Corinth, destroyed that year by earthquake, and has progressed since the Corinth Ship Canal was cut through the isthmus in 1893. It has a good harbour, and exports currants, etc. Pop. 5 000. See Corinth.

New Cross. Dist. of S.E. London. In the bor. of Deptford, it has stations on the L.B. & S.C. and S.E. & C. Rlys., and is a populous area between Peckham on the W. and Greenwich on the E. New Cross Road connects the Old Kent Road with Queen's Road, Peckham, and Deptford Broadway. Near to the junction of New Cross Road and Lewisham High Road is New Cross College, known, 1891 to 1905, as the Goldsmiths' Institute.

New Cut. London thoroughfare. It connects Lambeth Lower Marsh and Waterloo Road with Great Charlotte Street and Blackfriars Road, S.E. Notable for its brokers' shops, street stalls, and

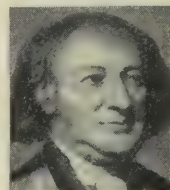
Sunday trading. It shared with Lambeth Marsh a somewhat unenviable reputation, dating from the days of Philip Massinger. At the Waterloo Road corner is the Royal Victoria Hall, formerly the Royal Coburg Theatre. See Victoria Hall.

Newdigate, SIR ROGER (1719-1806). English antiquary. Born at Arbury, Warwickshire, May 30, 1719, and educated at Westminster School and University College, Oxford, he succeeded his brother as 5th baronet, 1734. He was M.P. for Middlesex, 1741-47, and for Oxford University, 1750-80. Sketching in early youth old French and Italian architecture, he afterwards travelled in quest of marbles and other antiquities. He presented some to his college and the Radcliffe library, besides contributing £2,000 for transferring to Oxford the Arundel marbles, now in the University galleries there. He died Nov. 23, 1806.

Newdigate Prize. Award for the best poem on a given subject awarded each year to an undergraduate of the university of Oxford. It was founded in 1806 by Sir Roger Newdigate, and is worth £21 a year. Dean Stanley, John Ruskin, Matthew Arnold, Sir Edwin Arnold, and Oscar Wilde are among those who won it in their day.

Newel (old Fr. *noel*, kernel). In architecture, term originally denoting the central post or pillar of a spiral staircase. It is now extended to the angle posts in a straight staircase. The newel is a feature of the massive Jacobean staircase, in which it is crowned by a handsomely carved finial or by a statue.

New England. Name given to certain N.E. states in the U.S.A., formerly belonging to Britain. They are Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, and their inhabitants, descended from Scottish Presbyterians and English Puritans, are familiarly styled Yankees. The coast was explored in 1583 by Sir Humphrey Gilbert, and in 1614 by Capt. John Smith, to whom the name New England is due. The Plymouth Colony was established in 1620 in Massachusetts, and in 1643 a confederacy known as the United Colonies of New England was formed by the federation of New Haven, Connecticut, Massachusetts Bay, and Plymouth colonies, annual and



Sir R. Newdigate, English antiquary
After Romney

later triennial sessions being held. Its area is 62,000 sq. m. Pop. 7,400,000. See Pilgrim Fathers and the articles on the separate states; consult also *The Making of New England*, S. A. Drake, 1896.

New England Range OR **NEW ENGLAND PLATEAU**. Mountainous area of Australia, in New South Wales. It is the N.E. section of the plateau which crosses New South Wales roughly parallel to the coast. The E. face is a steep scarp separated from the Pacific Ocean by a coastal plain; on this side the Clarence, Richmond, and Tweed rivers flow between outlying parts of the plateau, such as the Richmond Range. To the W. the plateau drops in gentler slopes, and is drained by the Gwydir and Macintyre to the Darling. Ben Lomond and other peaks attain a height of about 5,000 ft. The Sydney-Brisbane rly. crosses the plateau close to the highest peaks.

Newent. Market town and parish of Gloucestershire. It is 10 m. from Gloucester, with a station on the G. W. Rly. It has some small manufactures. The church, an old foundation dedicated to S. Mary the Virgin, has been largely rebuilt, but contains some old monuments. There are mineral springs here. Market day, Tues. Pop. 2,800.

New Forest. Woodland district of Hampshire. It lies in the S.W. of the county between Southampton Water and the Avon, and has an area of about 144 sq. m. or 93,000 acres. It is about 16 m. across and 14 m. from N. to S. The chief places therein are Lyndhurst, Brockenhurst, Ringwood, and Minstead. It contains the ruins of Beaulieu Abbey, Rufus Stone, and other subjects of interest, and is watered by the Beaulieu river and other streams. The chief trees are the oak and beech. There are some deer in the forest, which has also a peculiar breed of ponies. The L. & S.W. Rly. has a line running through the forest with stations at Lyndhurst Road, Brockenhurst, and elsewhere.

Much of the land, about 63,000 acres, is the property of the crown, and to look after it there are a surveyor, verderers, and other officials, while forest courts are still held. The creation of the forest is usually ascribed to William the Conqueror, but it is more likely that he merely reserved for himself an area already forest. See Hampshire; consult also Highways and Byways in Hampshire, D. H. M. Read, 1908; *The New Forest*, E. Godfrey, 1912; *The New Forest*, W. F. Rawnsley, 1915.

Harbour Grace, Carbonear, Twillingate, Bonavista, Grand Bank, Placentia, and Burin, while around the coast, especially on the E. and S., are many fishing villages.

The town of Grand Falls owes its origin and prosperity to the pulp and paper mills established by the Anglo-Newfoundland Development Co., of which Viscount Northcliffe and his brother, Viscount Rothermere, were the pioneers. Placentia was the capital of the island under the French Government. Botwood, near the mouth of the Exploits River, is the summer port of the Anglo-Newfoundland Development Co., for shipping their pulp and paper.

Newfoundland has a remarkable quantity of fresh water, and it is said that ever one-third of its surface is covered with lakes and rivers. The longest rivers are the Exploits, Humber, and Gander. The Exploits rises among the hills of the S.W., and, after flowing through wooded country for about 200 m., falls into the Bay of Exploits, an opening of Notre Dame Bay. On it stands Grand Falls. Thwart Island is the largest of many in its channel. The Humber passes through Deer Lake into Bay of Islands. The Gander drains Gander Lake on its way to Hamilton Sound, and all around the island less extensive streams run down to the sea. The largest of several lakes is Grand Lake, 50 m. long, and containing an island 22 m. in length.

The Gulf Stream has a modifying influence on the climate, helping to make conditions far more temperate than on the adjacent mainland. In parts of the country the thermometer rarely drops below zero. In the interior—as, for instance, at Grand Falls—fogs are unknown.

Value of Fisheries

Newfoundland is first and foremost a fishing country, although of recent years it has become considerably engaged in the manufacture and export of pulp, paper, and iron ore, being the second largest producer of iron ore in the empire, Great Britain ranking first. There is an unlimited supply of codfish and herring in Newfoundland waters, and great potential value in its fisheries. In 1919-20 the export of dry cod amounted to 1,788,015 quintals of 112 lb., with an approximate value of £4,500,000. Among the other fish taken are the lobster, hake, turbot, haddock, salmon, trout, halibut, and eel. The fishery is prosecuted around the coasts of the island, on the Labrador coast, and on the Banks—submarine areas 200 m. from the Newfoundland coast—from April to Jan., and on the S. coast of

NEWFOUNDLAND AND ITS INDUSTRIES

Lord Morris, formerly Prime Minister of Newfoundland

Related articles include those on Canada; Labrador; North America. See Grand Falls; St. John's; Cod; Paper; Seal; also Daily Mail; Northcliffe, Viscount

Newfoundland is a dominion of the British Empire. It consists of Newfoundland proper, a large island in the N. Atlantic, off the continent of N. America, and a portion of the mainland in Labrador. The most N. point of the island is at the straits of Belle



Newfoundland arms

Isle, about seven miles wide, which divide Newfoundland from Canada. It is 42,754 sq. m. in area, its maximum length and breadth are both about 320 m., and it is roughly triangular in shape. It is larger than Ireland, and is the tenth largest island in the world. From its most E. point to the most W. point of Ireland the distance is 1,640 m. At Heart's Content the Great Eastern landed the Atlantic cable in 1867, and within a few miles of the same point the first successful air flight started across the Atlantic in June, 1919. The pop. is about 270,000.

The coast-line of Newfoundland

is much indented, giving it a total length of something over 2,000 m., not including the very small bays. Conception Bay, Trinity Bay, Bonavista Bay, and Notre Dame Bay are extensive arms of the sea on the E. and N. coasts; Fortune and Placentia Bays on the S. contain between them the Burin Peninsula. Bay of Islands and Bay St. George are on the fairly unbroken W. coast, White Bay on the N.E. coast, and St. Mary's Bay on the S. coast. The islands of St. Pierre and Miquelon, 15 m. off the S. coast, are held by the French, ceded to them under the treaty of Utrecht in 1713 with the provision that they are not to be fortified.

The hills are mainly near the coast. The Long Range runs for about 200 m. along the W. seaboard. Between these and the coast on the S.W. is the Anguille Range, but no peak is more than 2,000 ft. high. The range of hills that runs along by Bonne Bay reaches 3,000 ft. St. John's is the largest town. Port aux Basques is the W. terminus of the rly. which runs across the country. Other principal towns are



Newfoundland. Map of the island discovered by John Cabot in 1497, now a self-governing British dominion. Inset, the Labrador coast, its dependency on the mainland

Newfoundland all the year round. The fishing grounds on the coast of Newfoundland and Labrador constitute the most productive waters for fish on the W. side of the Atlantic, and the supply is more or less constant. When modern methods are applied to the prosecution and development of these fisheries, Newfoundland and Labrador will play an important part in the food production of the world. In addition to cod the fishing of lobsters and herrings is also largely prosecuted, and the seal fishery—which takes place annually on the ice floes—is also valuable.

Over almost the whole surface of Newfoundland are indications of vast mineral wealth. Copper,

silver, nickel, gold, iron, asbestos, mica, and other minerals of commercial value exist. Copper mines around the N. bays have been worked for many years, and have paid good dividends to the owners of the mines. The copper mine at Tilt Cove was worked for nearly 50 years, and had an output of nearly 60,000 tons a year, yielding a profit of 22 p.c. annually. The iron mines on Conception Bay are exceedingly rich and extensive. Including submarine areas recently developed, there is at present in sight something like 5,000,000,000 tons. Coal is also being developed, and rich seams were reported on as long ago as the days of the navigator Cook (1728–79).

The Anglo-Newfoundland Development Co. opened in 1910 pulp and paper mills at Grand Falls, which are regarded as the finest in the world. The steel and concrete buildings cover eight acres. They are fitted with the finest machinery, and produce 180 tons of paper and 240 tons of pulp a day. The forest areas from which the pulp is cut cover over 3,000 sq. m., and the enterprise represents an investment of £2,600,000. At Bishop's Falls, 10 m. distant, the Albert Reed Co., of London, built mills on a somewhat smaller scale.

Agriculture is still in an early stage of development, but much of the soil is extraordinarily fertile, and a rich future awaits Newfoundland

as a sheep-grazing and vegetable-growing country.

Newfoundland possesses a full measure of responsible government, as complete as that enjoyed by Canada, Australia, and S. Africa. The governor is appointed by the British Crown with the approval of the local ministry. The legislature consists of two houses—the legislative council, appointed for life, and a house of assembly, elected by popular vote for four years. Manhood suffrage and secret ballot are in force. Newfoundland is the only dominion having a naval service as a branch of the imperial naval establishment.

The school system in Newfoundland is entirely denominational. Newfoundland's prohibition law expired in 1925 after eight years existence. Under it no wines, spirits, or beer of any kind could be manufactured or imported. In 1919–20 the imports amounted to £8,300,000, and the exports to £7,100,000. The chief items in the latter category were dried cod, paper and pulp, and herrings.

HISTORY. Newfoundland was discovered by John Cabot on June 24, 1497, an achievement for which King Henry VII rewarded him with the munificent sum of £10. In 1498 Cabot made a second expedition to Newfoundland. In 1500 the Portuguese, under Gaspar de Cortereal, discovered and named Conception Bay and Portugal Cove. From 1521 Portuguese, Spanish, French, Basque, and English fishermen prosecuted the cod-fishery. In 1527 the first attempt to found a colony in Newfoundland was made by Robert Thorne, of Bristol. In 1578 the number of ships prosecuting the fishery in Newfoundland had reached 400, of which only 50 were English.

On Aug. 5, 1583, Sir Humphrey Gilbert formally annexed Newfoundland to England. The next attempt at colonisation on a large scale was by one Guy, a merchant of Bristol. A patent was granted to the earl of Northumberland, keeper of the privy seal, Sir Laurence Tansfield, baron of the exchequer, and Sir Francis Bacon, incorporating them under the name of treasurers and company of adventurers of the city of London and Bristol for the colony and plantation of Newfoundland. This colonisation by Guy was the first permanent settlement in Newfoundland, and the first settlement by the English in any part of what is now the British empire.

In 1615 Captain Whitbourne, of Devon, was sent to Newfoundland by the high court of admiralty to correct abuses which had sprung

up in connexion with the fisheries. On his return he wrote the first history of Newfoundland. In 1623 Sir George Calvert, afterwards Lord Baltimore, obtained a patent from James I of the whole of the peninsula of Avalon, and settled at Ferryland, near Cape Race.

In 1626 as many as 150 vessels came from Devon to prosecute the fisheries in Newfoundland. In 1630 a regular code of laws was issued by Charles I to govern the Newfoundland fisheries, and five years later the French received permission to dry fish along the coasts. In 1650 there were only 2,000 inhabitants in the fifteen harbours then settled. In 1654 further colonists arrived from England, under Sir David Kirke, and in 1660 the town of Placentia was founded by the French. By a regulation of 1663, masters of vessels were prohibited from carrying any settlers to Newfoundland. Merchants doing business there petitioned the king against sending out a governor, and rules were issued under a fine of £100 to bring back every fisherman brought out.

In 1697, under the treaty of Ryswick, the French were left in possession of a considerable settlement on the S.W. coast. In 1713, by the treaty of Utrecht, the whole island was ceded by France to England, but certain fishing rights were retained, out of which innumerable annual disputes have arisen. After many futile efforts, the question was finally settled with France in 1904. France relinquished practically all rights in Newfoundland, receiving compensation in another part of the world, and a monetary payment for fishermen affected.

Jurisdiction over Labrador

In 1792 the supreme court of judicature was established in Newfoundland, and in 1809 jurisdiction over Labrador was transferred from Canada to the government of Newfoundland. In 1811 permission was first granted to erect permanent houses, and in 1813 the first grants of land were made by Governor Duckworth. In 1818 a fishery treaty was made with the U.S.A., under which many disputes arose. They were, however, finally settled by arbitration at The Hague, in 1910. Newfoundland practically winning every point by the unanimous decision of the international court of arbitration. In 1832 representative government was granted, but not until 1855 was the full grant of responsible government inaugurated. 1865 saw the first geological survey of the island. In 1869 took place an election, by which the party favouring confederation with

Canada was defeated by a very large majority at the polls. Since then one other serious attempt at union has also failed. In 1871 the garrison of British troops was withdrawn from Newfoundland. In 1880 took place the turning of the sod for the first railway from E. to W., which, by the addition of various branches, now extends over 1,000 m. At the W. terminus of the route is Port aux Basques, 60 m. from Sydney, on Cape Breton Island; fast steamers connect the Newfoundland rly. with that port.

Services in the Great War

Newfoundland provided a very creditable percentage of fighting men for its population. 11,922 joined the various services, and, in addition, 3,000 Newfoundlanders enlisted in the Canadian and other forces. A distinct unit known as the Royal Newfoundland Regiment was formed, and this received its baptism of fire in Gallipoli, Sept., 1915. After the evacuation it proceeded to Egypt and accompanied the 29th division to France, joining the 8th Army Corps. It fought in the battle of the Somme, 1916, especially distinguishing itself in the first attack on Beaumont-Hamel; in 1917 at Monchy-le-Preux, Paschendale, Ypres, and Cambrai; and in April, 1918, at Neuve-Église, where it materially helped in defeating the German offensive. In Sept. the Newfoundlanders were transferred to the 9th division, and fought around Ypres, at Polygon Wood, and elsewhere. During the final Allied advance, Oct.–Nov., they captured over 500 prisoners and 100 machine guns.

The Forestry Corps, numbering about 1,000 men, did useful work in Scotland. The Dominion also provided nearly 3,000 seamen to the Newfoundland R.N.R., who served in warships and armed auxiliaries. A war memorial is to be erected in France to the memory of Newfoundland's dead: it represents a caribou—the badge of the regiment—on a great block of granite, the work designed and carried out by Basil Gotto. Five reproductions will be made and placed at points along the battle front. *Proton. Newfoundland.*

Bibliography. Stanford's *Compendium of Geography and Travel*, N. America, vol. i, 1907–11; *Historical Geography of the British Colonies* (Newfoundland), J. D. Rogers, 1911; Newfoundland, in 1911, P. T. MacGrath, 1911; *Histories*: C. Pedley, 1863; D. W. Prowse, 1897.

Newfoundland Dog. Large, handsome, and intelligent breed of dog. First introduced to Britain from Newfoundland in the

18th century, the breed has been further improved, and the conservation of its good points by breeders is looked after by the Newfoundland Club, whose influence has been mostly in favour of a dog wholly black, save for a patch of white, perhaps, on the chest and toes. It is probable, however, that the original colour was white with black head, black saddle mark, and black at the base of the tail. According to the standard fixed by the club, the average height at shoulders is 27 ins. for a dog, and 25 ins. for a bitch; but there are many existing examples that exceed the average.

The Newfoundland's coat is flat and dense, rather coarse and oily, and falls back into position when disarranged. The fore-legs are straight and muscular, and the feet large and well shaped. The tail, which reaches below the hocks, is thick, covered with long hair, and slightly curved at the tip. Ears and eyes small, the latter of dark brown colour. His disposition is tractable and affectionate, especially with children.

The lesser Newfoundland or Labrador dog is all black. From it has sprung by intercrossing the curly-haired black retriever (*q.v.*). See Dog; colour plate; consult also *The Twentieth Century Dog*, H. E. Compton, 1904.

Newfoundland Regiment. Unit raised for service in the Great War. Formed in Aug., 1914, of volunteers without previous military experience, after a period of training it went to England, thence to Gallipoli, in 1915, where it was attached to the 29th division, and later fought in France, in



Newfoundland Regiment badge

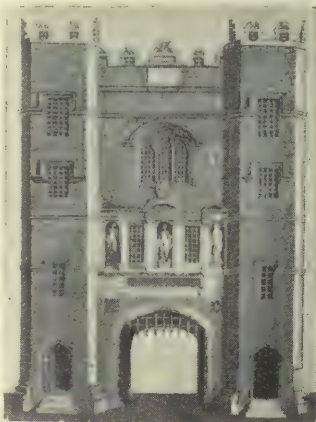


Newfoundland Dog. Champion Gipsy, a prize specimen of the breed

Feb., 1918. King George granted it the title of royal, the first such grant made to a regiment in the Great War.

Newgate. Former gaol in the city of London. A gaol stood on the same site for almost 1,000 years, and records go back to the time of King John. The prison was then in the gate house, i.e. New Gate, as was the rule in medieval times.

A new prison was begun in 1420, burnt down in 1666, rebuilt upon the same lines, and again rebuilt 1778-80, only to be partly destroyed by fire during the Gordon Riots, 1780. Reconstructed in 1857, the gaol was taken over by the government from the city authorities in 1877; three years later ceased to be a place of detention, and in 1903-4 was demolished, its site being now occupied



out within the walls of prisons. The last man to be hanged in front of Newgate was the Fenian, Michael Barrett, May 26, 1868, and the last criminals executed within its walls were Millsom and Fowler, 1896. Vast crowds used to assemble to see the executions, large sums being paid for seats to view, while dancing and drinking orgies were common. See Central Criminal Court; Old Bailey; consult also *Chronicles of Newgate*, A. Griffith, 1884; *The Old Bailey and Newgate*, C. Gordon, 1902; *Trials from the Newgate Calendar*, 1907.

New Glasgow. Town of Nova Scotia, Canada. It stands on the East river, 105 m. from Halifax, and 3 m. from the coast at Pictou Harbour. There are large coal mines in the neighbourhood, and the industries include iron and steel works, a car company, and works for making bricks, tools, etc. A short rly. carries the coal for export to Pictou landing, where it is shipped. Pop. 6,400.

New Goa or **PANJIM.** Capital of the Portuguese possessions in India. Known also as Nova Goa, it is the seat of a R.C. archbishop, and is on the W. coast of the Decan. Pop. 9,300.

Newgrange Monuments. Bronze-age cemetery of 17 grave-mounds in the Boyne valley, co. Meath, Ireland. At Newgrange a round cairn, 315 ft. across, 70 ft. high, has a megalithic retaining wall, and a stone circle of 12—once 30—menhirs. A 63-ft. gallery leads to a corbelled chamber with three side-cells. Spiral and other designs suggest Aegean influence; some probably represent a female divinity. See *Maeshowe*.

New Guinea. Island of the Pacific Ocean, in the East Indian Archipelago. Physically it belongs to the festoon of islands which parallels the Australian E. coast, and includes New Caledonia and New Zealand. The fauna and flora are distinctly Australian in type, but the natives are neither Asiatic nor Australian, being akin to the Melanesians of the neighbouring South Sea Islands. Its area is about 300,000 sq. m.

Politically the island is Dutch in the W. and British in the E.; the Dutch section is administered in connexion with the Moluccas; the British section is Australian, the S.E. being the territory of Papua, and the N.E. the former German New Guinea now joined to Australia by mandate.

Dutch New Guinea comprises more than half of the island. The early voyages of the captains of the Dutch East India Co. led to an imperfect knowledge of the coast,

by the Central Criminal Court.

In 1783 the public gallows were removed from Tyburn to the outside of Newgate, and there executions took place until 1868, when an Act was passed ordering all hangings to be carried



Newgate, London. The old gaol, from the church of St. Sepulchre, showing corner of Newgate Street and the Old Bailey, from a print of 1800. Top, right, New Gate, a 17th century view of the city gate which once served as a prison

which was mapped with fair accuracy as a result of the visits of scientists such as A. R. Wallace during the 19th century. The interior has not been fully explored, but mountains have been named, Arifak, Orange, Nassau, and Charles Louia Ranges; the lower courses of the rivers Mamberano, Digul, Merauke, etc., are known, and Santani Lake has been visited. Much of the area is covered with primeval forest; rice, sugar-cane, maize, and yams are cultivated by the natives; marsupials, birds of paradise, emus and trepang are typical animals.

A progressive policy now makes for greater cooperation of effort; the three divisions, S., N., and W., are united under an administrator resident in the territory. Fakfak, Merauke, Okaba, Koembe are centres of missionaries, police agents, and traders. Plantations are steadily increasing in acreage; coal has been found, copra is exported. The colony includes the Schouten Islands off the N. coast at the wide mouth of Geelkin Bay. Area, 150,000 sq. m. Pop., est., 200,000.

The former Kaiser Wilhelmsland, acquired by Germany in 1884, is slightly better known. The Kaiserin Augusta, Ramu, and Markham rivers, the Victor Emmanuel and Bismarck Ranges have been slightly explored. A small area has been planted with coconut palms. Madang is the chief place. Area, 72,000 sq. m. Pop., est., 100,000.

Since 1900 exploring parties have made valuable discoveries; a new ant-eating porcupine, and a new human type, the Tapiro dwarfs, have been found in Dutch New Guinea, and Wilhelmina Peak, with its snow-clad summit, in the Orange Range, has been reached. Evidences of a prehistoric population have been found near Huon Gulf. The N. coast is high, the rest low, swampy, and fringed with mangroves. Above 13,000 ft. the forest gives place to pastures similar to those of the high Alps. See Oceania; Papua; consult also Head Hunters, Black, White, and Brown, A. C. Haddon, 1902; The New New Guinea, B. Grimshaw, 1911; The Annual Bulletin of Papua.

New Hampshire. State of the U.S.A. It has a small stretch of coast on the Atlantic, and its area is 9,340 sq. m. Its uneven surface attains an alt. of 6,288 ft. in Mt. Washington, one of several peaks of the White Mts. which exceed 5,000 ft. The state is drained chiefly by the Merrimac in the centre, Androscoggin in the N.,



New Guinea. Map of the largest island in the East Indian Archipelago

Connecticut on the W. frontier, and Piscataqua on the S.E. border; of many small and picturesque lakes Winnepesaukee has the greatest area. More than 75 p.c. of the surface is covered with forest. Hay, maize, potatoes, and oats are cultivated; boots and shoes and cotton and woollen goods manufactured, and granite and mica quarried. Upwards of 1,500 m. of rlys. serve the state. Two senators and two representatives are sent to Congress. Concord is the capital, and other large places are Manchester, Nashua, Dover, and Portsmouth.

The first settlement in New Hampshire was made in 1623, where Rye now stands. The district was part of a grant of land made to John Mason, and after other settlements had been planted, a dispute began between the company of Massachusetts and the heirs of Mason over the boundary. In 1679 Charles II made New Hampshire, which was in New England, into a separate province, but right up to the outbreak of the War of Independence there were boundary disputes with Massachusetts. The people joined in the fight for independence, and New Hampshire was one of the 13 original states of the union. Although it had suffered much from the attacks of the Indians, it was then a colony with about 80,000 inhabitants. Pop. 443,000.

New Hanover. Island of the Bismarck Archipelago. In the Pacific Ocean, it was formerly a German possession. It is separated from New Ireland, or New Mecklenburg, by Byron Strait. Area, including several adjacent islets, 540 sq. m. Mountainous and well timbered, it has fertile soil along the coast, producing copra, coffee, rubber, and cotton. Called Neuhanover by the Germans, it was occupied by British troops in 1914. It is administered by Australia under a mandate of the League of Nations.

New Harmony. Town of Indiana, U.S.A., in Posey co. It stands on the Wabash river, 17 m. N. of Mount Vernon, and is served by the Illinois Central Rly. It was originally settled in 1814 by a German community of religious socialists known as Harmonists, from whom it was acquired in 1824 by Robert Owen, who conducted a socialistic experiment, which, although at first successful, had to be abandoned in 1826. New Harmony has flour, brick, and other industries. Pop. 1,200.

Newhaven. Seaport and urban dist. of Sussex. It stands at the mouth of the Ouse, 8 m. E. of Brighton and 56 from London. The L.B. & S.C. Rly. has two stations here, town and harbour. The chief building is S. Michael's Church, with a Norman tower and chancel, restored and enlarged in



Newhaven, Sussex. Mouth of the Ouse and harbour, looking inland, with cross-channel passenger steamer leaving for Dieppe
Benn & Cronin, Ltd.

the 19th century. Newhaven has a good harbour, covering about 30 acres, and from here steamers go regularly to Dieppe and other ports, carrying both passengers and goods. There is also a coasting trade, while ship-building is an industry. Off the port is one of the best roadsteads of the S. coast.



Newhaven arms

best roadsteads of the S. coast.

During the Great War Newhaven Harbour was closed for civilian traffic, and became a base whence all kinds of war material were sent to France, over 8,000 transport vessels sailing from here. Formerly known as Meeching, Newhaven received its present name when the harbour was begun soon after 1710. It soon became a prosperous port, and, after a period of decay, revived in the 19th century. Pop. 6,700.

Newhaven. Seaport of Midlothian, Scotland, since 1920 included in the city of Edinburgh. It stands on the S. side of the Firth of Forth, 2 m. from Edinburgh, with a station on the Cal. Rly. It received its name from the harbour built here about 1490. Fishing is the principal industry.

New Haven. City of Connecticut, U.S.A., the co. seat of New Haven co. The largest city and chief seaport of the state, it stands at the head of New Haven Bay, a few miles from Long Island Sound, 70 m. N.E. of New York, on the New York, New Haven and Hartford Rly. One of the most picturesque cities of the U.S.A., New Haven is the seat of Yale University, founded at Saybrook in 1700, and transferred hither in 1716, and the Hopkins Grammar School, founded 1660. East Rock Park covers 408 acres.

The manufacturing interests are important, the principal products including hardware, ammunition and firearms, iron and steel goods, packed meats, rubber articles, clocks, and cutlery. The city is a busy distributing centre, and carries on a large coasting trade. A party of Puritans from London settled here in 1638, and in 1665 the settlement was united with Connecticut. New Haven was the joint capital of the state from 1701 to 1873, and was chartered as a city in 1784. Pop. 162,500.

New Hebrides. Group of islands in the Pacific Ocean. They lie between Santa Cruz Islands on the N. and the Loyalty Islands on the S., the Fiji Islands being on the E., and the Coral Sea on the W. The parallel of 15° S. crosses them.

The principal are Espiritu Santo, Mallicolo, Epi, Efate or Sandwich, Erromanga, Tanna, Aneityum, and Futuna, and all are administered by British and French officials under the Anglo-French Convention of 1906. Numbering about 30 islands and islets, mostly of volcanic origin, 20 are inhabited. All are wooded or covered with luxuriant vegetation, and some are mountainous with a moist, unhealthy climate. They produce copra, bananas, sago, rubber, tortoiseshell, sandalwood, and coffee. The importation and distillation of spirits are prohibited. There are R.C. and Presbyterian missions on the islands, and the trade is mostly with Sydney and New Caledonia. Discovered by Quiros in 1606, they were visited and named by Captain Cook in 1774. The total area is about 5,000 sq. m., and the pop., chiefly Melanesian, is estimated at 70,000, including some 250 British and 400 French.

New Iberia. City of Louisiana, U.S.A., the capital of Iberia parish. It stands on the Bayou Teche, at the head of its navigation, 130 m. W. of New Orleans, and is served by the New Iberia and Northern and other rlys. Manufactures include foundry and machine-shop products, wagons, soap, and sashes. Sugar, cereals, and fruits are cultivated locally, and salt is also obtained. New Iberia was organized in 1835 and became a city in 1839. Pop. 6,300.

Newington. Name of a parish of the met. bor. of Southwark, in the co. of Surrey, and of several other parishes in England. That on the Thame, 9 m. S.E. of Oxford, contains an ancient church, S. Giles's, with a 14th century tomb. Newington, Kent, 8 m. E. of Rochester, also has an old church, S. Mary's, a Decorated flint structure, with lofty Perpendicular west tower, brasses, and other monuments. At South Newington, a village 6 m. S.W. of Banbury, Oxfordshire, the church of S. Peter contains some notable Norman, Early English, and Perpendicular work. See Southwark.

Newington Butts. London thoroughfare. Linking Kennington Park Road with Newington Causeway, Southwark, S.E., it contains the Metropolitan (Spurgeon's) Tabernacle, built 1860-61, rebuilt in 1898; the memorial clock-tower and churchyard of S. Mary, Newington, a church demolished in 1876; and the modernised Elephant and Castle inn, once a coaching rendezvous and now a tramway, omnibus, and tube centre. Near the inn Joanna Southcott (*q.v.*) set up a meeting-house. The name

Newington Butts is variously derived from an old archery ground, and from that of a family once owning an estate here.

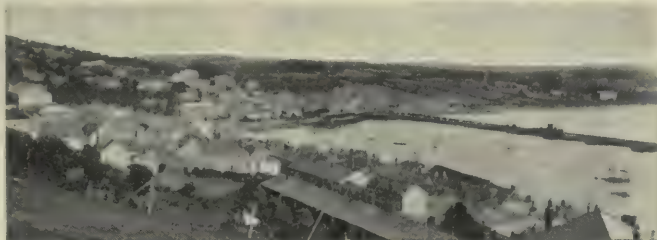
New Ireland. Island of the Bismarck Archipelago (*q.v.*). It is separated from New Britain by St. George's Channel. Long and very narrow, it is mountainous in the S. and level in the E. There are extensive forests, but the climate is unhealthy. The natives are a low type of Melanesians. As Neumecklenburg, it formed part of a German protectorate until 1914; it has since been joined to Australia by mandate. Area, 4,900 sq. m. See Papua.

New Jersey. One of the states of the U.S.A. With an area of 8,224 sq. m., of which 710 are covered with water, it has a coastline on the Atlantic. The surface in the N. is crossed by ridges and mountains of the Appalachian system, the centre is generally level, and the S. slopes towards a marshy coast, and is largely a pine-wood region. The coast is "barred" by shady islands, forming summer resorts, separated from the mainland by lagoons. The Delaware, which marks the W. frontier, is the principal river, and next in importance are the Passaic and Raritan. Agriculture and forestry are followed, but the chief industry is the manufacture of textiles; iron, zinc, granite, and limestone are worked. Besides 3,640 m. of steam and electric railways, there are 175 m. of canal for transport. Two senators and ten representatives are sent to Congress. The chief cities are Newark, Jersey City, Paterson, Camden, and Hoboken, and the capital is Trenton.

The first settlers in New Jersey were the Dutch, who arrived about 1620. They were followed by some Swedes, but in 1658 the settlements of the latter passed under the rule of the former. During the war between the English and Dutch, the English took possession of the district and the name of New Jersey was given to it, because one of those to whom the land was granted by its new lord, James, duke of York, was Sir George Carteret, who had been governor of Jersey. It then became a proprietary colony, but there was a good deal of trouble because of the rival claims of the proprietors, and it was divided into East and West Jersey. In 1702 the two were placed under the same governor and united as a crown colony, and so matters remained until the outbreak of the War of Independence, when New Jersey became one of the original thirteen states. Pop. 3,156,000.

New London. City and port of entry of Connecticut, U.S.A., and the co. seat of New London co. It stands on the river Thames, 3 m. above Long Island Sound, 50 m. E. of New Haven, and is served by the Central Vermont and the New York, New Haven and Hartford rlys., and by steamers. A favourite summer resort, and one of the best harbours on the coast, it is a U.S. naval station, fitted with constructing and repairing establishments. Silk, cotton, woollen goods, and machinery are manufactured, and there are shipbuilding yards, foundries, machine shops, and engine works. The whale and seal fisheries were formerly important. New London, originally called Nameaug, was founded in 1646, and became a city in 1784. Pop. 25,700.

Newlyn. Watering-place on Mount's Bay, 2 m. S.W. of Penzance, Cornwall. Its situation has



Newlyn, Cornwall. The town and harbour from the south

made it a resort of artists, but it is also a fishing centre, with a good harbour protected by huge granite piers. Pilchards and mackerel are caught. The church is dedicated to S. Peter. Pop. 4,400.

Newlyn School. Colony of British artists formed about 1880 at Newlyn, Cornwall. The aim was to encourage work in the open air, the equable climate and grey atmosphere of the place offering facilities for study of the model in diffused daylight. Walter Langley, Stanhope Forbes, and H. S. Tuke are the best known of the artist pioneers of the colony.

Newman's. Town of Lanarkshire, Scotland. It stands on the coalfield, 2 m. N.W. of Wishaw, with a station on the Cal. Rly. The chief occupations are in the coal mines and the Coltness iron-works. Pop. 2,800.

Newman, FRANCIS WILLIAM (1805-97). British author. Born in London, June 27, 1805, a brother of the future cardinal, he was educated at Worcester College, Oxford. He became a fellow of Balliol, but owing to his advanced religious views he resigned in 1830, and for some years taught at Bristol. In 1840, having been associated with

the Unitarians, he became professor in Manchester New College, and in 1846 professor of Latin at



F. W. Newman,
British author
Elliott & Fry

University College, London. He resigned in 1869, and died Oct. 7, 1897. Newman wrote *The Soul*, 1849, and *Phases of Faith*, 1850; also books on philology and a great variety of other subjects. See *Memoir and Letters of F. W. Newman*, T. G. Sieveking, 1909.

Newman, SIR GEORGE (b. 1870). British medical man. Educated at Edinburgh University and King's College, London, he was senior demonstrator of bacteriology and infective diseases at King's College, London, 1896-1900. He was then,

full of plans which resulted in what is known as the Tractarian or Oxford Movement.

In 1833, in conjunction with Hurrell Froude and others, he began the publication of the *Tracts*



John H. Card. Newman

From a drawing by Lady Coleridge

for the Times. In the pulpit of the university church Newman was now preaching sermons which attracted wide attention by their literary perfection, dialectical skill, and devotional tone, combined with the evident sincerity and the personal charm of the preacher. He thus exercised an almost unique influence on the younger thought of Oxford, and indirectly on the Church generally. In 1841 he published *Tract XC*, in which he argued that the 39 Articles were capable of an interpretation very different from the Protestant one usually accepted. This roused a storm of indignation, and in the following year he retired to Littlemore, and resigned the living of S. Mary's.

In 1845 Newman was received into the Roman Church, and went a year later to Rome, where he was ordained priest and made a D.D. Returning to England in 1847, he settled at Edgbaston, where he founded a congregation of the Oratory. He established the London Oratory in 1850, and in 1854 became rector of the R.C. university at Dublin. During the following four years he published his *Idea of a University* and his *Lectures on University Subjects*. A controversy with Charles Kingsley resulted in his autobiographical *Apologia pro Vita Sua*, 1864. In 1879 he was made cardinal. He lived in retirement at Birmingham until his death, Aug. 11, 1890.

Newman was recognized as one of the most acute thinkers of his day, and his literary style has rarely been surpassed for beauty and clarity. As a preacher he

in turn, lecturer on public health at S. Bartholomew's Hospital, and medical officer of Finsbury and Bedfordshire before becoming chief medical officer

of the board of education. He was made chief medical officer of the ministry of health, July, 1919. Knighted in 1911, he was created K.C.B. in 1918.

His published works include *Bacteriology and the Public Health*, 1904; *Infant Mortality*, 1906.

Newman, JOHN HENRY (1801-90). British theologian and cardinal. He was born in London, Feb. 21, 1801, and educated at Trinity College, Oxford, becoming in 1822 a fellow of Oriel. Four years later he was appointed tutor, and in 1828 became vicar of S. Mary's, Oxford, having been in the meantime for a short period vice-principal of S. Alban's Hall. He resigned his tutorship and went for a tour in S. Europe with Hurrell Froude. He returned to England



Sir George Newman,
British medical man
Russell

stood in the first rank, and the influence of his writings has yet to be fully estimated. His dialectical skill was unrivalled; but it was often overwhelming rather than convincing. His hymn, *Lead, Kindly Light*, and his poem, *The Dream of Gerontius*, have achieved wide popularity. See *Oxford Movement*.

Bibliography. Letters and Correspondence, ed. A. Mozley, 1891; *The Oxford Movement*, R. W. Church, 1891; *The Anglican Career of Cardinal Newman*, 2 vols., E. A. Abbott, 1892; *Lives*, R. H. Hutton, 1891; W. Barry, 1904; W. P. Ward, 1912.

Newman Prize. Naval prize founded in memory of Edward Newman, R.N., chief engineer of Portsmouth dockyard. From the interest upon £400 a prize of books or scientific instruments is given annually to the engineer lieutenant R.N. who takes first place in practical engineering.

Newmarch, WILLIAM (1820-82). British statistician. Born Jan. 28, 1820, at Thirsk, he entered a bank, and then an insurance office in London. From 1862-81 he held a high position in the banking house of Glyn, Mills & Co. He died March 23, 1882. Newmarch did a great

among the stops. This gives the lead to the person who played the last card before the stop. Any player in the course of a hand able to play a duplicate of any card in the lay-out wins all the stakes placed upon that particular card.

Newmarket. Urban dist. and market town of Cambridgeshire and Suffolk, also the headquarters of horseracing in England. It is 13 m. from Cambridge, with a station on the G.E. Rly. The racecourse on Newmarket Heath contains ten courses, the longest of which is 4 m. It is traversed by the Devil's Dyke. Around are numerous training establishments, and the main industry is providing for the horses and the visitors to the frequent race meetings. The races include the Cambridgeshire, Cesarewitch, and Two Thousand Guineas. The Jockey Club has its headquarters here. The buildings connected with racing include the Subscription Rooms, Rous Memorial Institute, and Astley Institute. S. Mary's, an old Gothic building restored, and All Saints are the chief churches.

James I made Newmarket a racing centre, and built a house

3-in. protected deck. Armament twelve 14-in., fourteen 4-in., four 3-in. anti-aircraft, and ten light guns, and four submerged torpedo tubes. She had two turbo-electric generating sets of 11,400 kilowatt capacity, not connected with propeller shafts. Electric power was transmitted to motors of 6,600 h.p., one on each of the four propeller shafts, the motors being close to the stern of the ship.

New Mexico. S.W. state of the U.S.A. The surface is crossed by many detached ranges of the Rocky Mountain system, except in the S.E., where it is a barren plain, the whole comprising part of a great plateau with a minimum elevation of about 3,000 ft. The Rio Grande flows N. to S., and cuts the state into two unequal portions, and further E. the Rio Pecos, an affluent of the Grande, follows a similar course. Except in the river valleys, agriculture depends on irrigation, which is being greatly extended, the chief crops being cereals, fruit, and vegetables. The mineral resources are of great value, gold, silver, copper, coal, granite, limestone, and turquoises being the principal products; grazing, stock-raising, and lumbering



Newmarket, Cambridgeshire. The Rowley Mile course, during the running of the Thousand Guineas race, April 29, 1921

deal of work for the Royal Statistical Society, and contributed to *The Economist*. He assisted T. Tooke in writing *The History of Prices*. The Newmarch lectureship at University College, London, commemorates him.

Newmarket or Stops. Card game for three to eight players, played with a full pack, and a lay-out made up of four cards taken from another pack. The dealer and each of the other players must stake an equal amount upon one, or divide it among any of the four cards of the lay-out. The cards are dealt one at a time to each person, and also to an extra hand, the cards in which form "stops." The eldest hand leads any card he chooses, but it must be the lowest he holds of any particular suit, and he may continue to place other cards upon it so long as he is able to do so in sequence. When he fails, the next player follows on if possible, the play passing in turn to each player until the run is broken by the requisite card being

here, as did Charles II, whose residence in the High Street is still shown. Market day, Tues. Pop. 10,500. See *Horse-racing*; consult also *A History of Newmarket*, J. P. Hare, 1886.

New Mexico. American battleship, and the first all-electric warship built. Built 1917-19, 624 ft. long, with a beam of 97½ ft., her machinery, 34,000 h.p., gave a speed of 21 knots. Her armoured belt was 14 ins. thick, and she had a

are carried on. Several institutions, besides the state university, provide higher instruction, and 3,050 m. of rlys. serve the state. Two senators and one representative are sent to Congress. The capital is Santa Fé. The territory was formed from districts ceded by Mexico in 1848, purchased from that country in 1853, and ceded by Texas. It was admitted to the Union in 1911. Its area is 122,634 sq. m. Pop. 360,400.



U.S.S. New Mexico, American battleship, built 1917-19, the first warship of any navy to be driven solely by electricity

New Mills. Urban dist. and town of Derbyshire, England. It stands on the Goyt, 8 m. S.E. of



New Mills urban district seal

Stockport, being served by the L. & N.W. and the G.C. rlys. The industries include calico-printing, cotton band manufactures, and coal-mining. Gas and water are supplied by the council. Market day, Sat. Pop. 10,500.

Newmilns. Police burgh of Ayrshire, Scotland. It stands on the Irvine, 7 m. from Kilmarnock and 18 m. from Ayr, and is served by the Glasgow and S.W. Rly. There is a town hall, the gift of William Morton.



Newmilns and Greenholm arms

Newmilns was made a burgh in 1490, and had a castle about that time, but its modern prosperity dates from the introduction of the lace and other textile manufactures in the 19th century. The burgh includes Greenholm on the opposite side of the river. Pop. 4,800.

New Model Army. Name given to the army raised in 1645 by the Parliament to fight against Charles I. After the passing of the self-denying ordinance, and the consequent resignations of some of the leading generals, Parliament raised from the existing army and by impressment a special force of 14,000 infantry and 7,000 cavalry. It was placed under Sir Thomas Fairfax, was known as the new model army, and quickly became a drilled and disciplined force. On June 13, 1645, Cromwell joined it as leader of the cavalry, and on the next day it fought and won the battle of Naseby. The Coldstream Guards trace their descent to the New Model. *See* Army, British; Cromwell, Oliver.

Newnan. City of Georgia, U.S.A., the capital of Coweta co. It is situated 40 m. S.S.W. of Atlanta and is served by the Atlanta and West Point and other rlys. Phosphates and fertilisers are manufactured; cotton, cottonseed oil, and cotton goods are exported; iron-foundries and machine shops produce boilers, tanks, etc. The city owns the waterworks and electricity plant. It is the centre of a rich fruit-growing dist. Pop. 7,000.

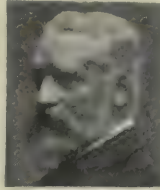
Newnes. Town of New South Wales, Australia. It is in Cook co., on the central tableland, 35 m. N.N.E. of Lithgow. Noted for its

mines of oil shale, it is the terminus of a branch line from Newnes Junction on the main western rly. from Sydney to Bourke. Pop. 1,600.

Newnes, Sir George (1851-1910). Founder of the publishing firm of George Newnes, Ltd. Son of the Rev.

T. M. Newnes, Congregational minister, he was born at Glenorchy, Matlock Bath, March 13, 1851, and educated at Silcoates and the City of London School. Beginning life in the fancy goods trade, he started the weekly periodical, *Tit-Bits* (*q.v.*), at Manchester, 1881, and brought it in 1884 to London. Later he issued *The Strand Magazine*, *The Sunday Strand*, *The Wide-World Magazine*, *The Ladies' Field*, *Woman's Life*, and other publications, including books. In 1893 he started *The Westminster Gazette* (*q.v.*). His firm, turned into a limited company in 1891, was reconstructed in 1897, and in 1920 joined forces with that of C. Arthur Pearson, Ltd. He was Liberal M.P. for Newmarket, 1885-95, and for Swansea, 1900-10. Made a baronet, 1895, he gave a library building to Putney and a town hall to Lynton, N. Devon, where he died June 9, 1910. *See* Life, Hulda Friederichs, 1911.

Newnham College. College for women, Cambridge. Founded for resident women students in 1871 by the Newnham Hall Company, the first hall was built in 1875. Five years later the company was amalgamated with the Association for Promoting the Higher Education of Women in Cambridge, and the society was incorporated. The college includes Old Hall (the original Newnham Hall), Sidgwick Hall, Clough Hall, so named after the first principal, Anne J. Clough (*q.v.*), Peile Hall, and College Hall, the last named used for dinners, concerts, etc. It is undenominational, and has a laboratory in the town for biological and physical studies. There is accommodation for over 200



Sir George Newnes, British publisher Langstaff

students, under a principal, 4 tutors, and 17 resident lecturers and fellows. The college offers scholarships. *See* A Short History of Newnham College, Cambridge. A. Gardner, 1921.

New Norfolk. Town in Tasmania. It stands on the Derwent, 20 m. N.W. of Hobart by rly. It is the centre of a fruit and hop growing dist. Pop. 6,100.

New Orleans. City and port of Louisiana, U.S.A. The capital of Orleans parish and the largest city and the commercial capital of the state, it stands mainly on the left bank of the Mississippi river, 107 m. from its mouth, and is served by the Southern Pacific and other rlys. Much of the land bordering the city proper is marshy and below the level of the river at high tide, necessitating the building of embankments called levees, which extend along the city front and for many miles up and down the river. The city covers an area of about 200 sq. m., but the inhabited portion is only about 40 sq. m. in extent. It has 27 m. of frontage, on both banks of the river, which at a point opposite Canal Street is half a mile wide and from 40 ft. to 200 ft. in depth.

The streets in the central part are mostly narrow, but in the suburbs are broad and lined with trees. Canal Street, which separates the picturesque old French section from the newer and commercial American part, is the principal business thoroughfare. The principal open spaces are the Audubon Park of 250 acres, the City Park of 216 acres, and Jackson Square, Beauregard Square, and Lafayette Square.

With few exceptions the public buildings lack architectural splendour. The most noteworthy are the cathedral of S. Louis, a Creole-Spanish structure erected 1794, the archbishop's palace, dating from 1737, the granite custom house near the E. end of Canal Street, and the Cotton Exchange.

Institutions for higher education are the Tulane University, known formerly as the university of Louisiana, with faculties of law, arts and sciences, medicine, and technology, the Orleans and three other universities for coloured students, the Ursuline Academy, founded 1730, the oldest educational establishment in the city, and the Jesuit College, opened 1847. Among a number of



Newnham College, Cambridge. Sidgwick Hall and, right, Clough Hall, from the south



New Orleans, Louisiana. 1. Lafayette Square, with S. Patrick's Church, left, and, right, the City Hall. 2. Cathedral of S. Louis and statue of General Andrew Jackson. 3. Canal Street, the principal thoroughfare of the city. 4. The new Court House in Royal Street

libraries are the Howard Memorial, the Tilton Memorial, and one supported by the state. The French Opera House, the principal place of entertainment, dates from 1859.

The cemeteries are a remarkable feature of New Orleans. The soil is so saturated with water that burial beneath the surface is not possible, and vaults with arched cavities are used, the coffins being ranged one above the other in tiers, 12 ft. above the ground level.

New Orleans is one of the most important commercial cities of America, and, after Liverpool, the foremost cotton port of the world. Although primarily a commercial city, it has also flourishing manufacturing interests. Sugar refining is a leading industry, and machinery, cotton goods, cotton-seed oil, boots and shoes, cigars, and furniture are produced.

Settled in 1717 by the French, who named it after the duke of

Orleans, then regent of France, New Orleans was later deserted, but was resettled in 1722. The second settlement made immediate progress, and New Orleans became the seat of government of the French territory of Louisiana, and continued to flourish after its cessation to Spain in 1763. In 1800 it fell to France, from whom it was purchased by the U.S.A., together with the remainder of Louisiana, in 1803, and ten years later was incorporated, having become a port of entry the previous year. It was the capital of Louisiana down to 1849, when it was superseded by Baton Rouge, but 15 years later it again became the seat of government until 1880, when it once more gave place to Baton Rouge. In 1815 an unsuccessful attack on the city was made by the British. Pop. 387,000.

New Plymouth. Town of New Zealand. Situated on the S.W. coast of N. Island, N. of Mt. Egmont, it is the chief town of the Taranaki dist. It is a centre for the cattle-rearing and dairying industry of the dist., and is connected by rly. via Marton Junction with both Wellington and Auckland. The first settlement was made by the pioneers of the New Plymouth Co. in 1841. Pop. 9,800.

New Pomerania (Germ. *Neupommern*). Former name of the island of the Bismarck Archipelago now called New Britain (*q.v.*). It was taken from Germany in 1914.



New Orleans, Louisiana. Plan of the central districts of the city, showing the principal quays on the Mississippi

Newport. Mun. borough and market town, also the capital, of the Isle of Wight. It stands on the



Newport, Isle of Wight, borough seal

Medina, near the centre of the island, 10 m. from Ryde, and is served by the island rlys., of which it is the headquarters. The chief building is the church of S. Thomas. Rebuilt in the 19th century,

it contains some memorials from the older building, and a monument to Princess Elizabeth, daughter of Charles I. There is a guildhall, corn exchange, museum, a grammar school dating from 1612, and a school for girls, which was founded in 1761.

In the grammar school, Charles I and the parliamentarians arranged the treaty of Newport. The industries include the making of beer and cement; and the town is a centre for the general trade of the island. Newport began as a port, and in the 12th and succeeding centuries its citizens obtained various privileges, while it took the place of Carisbrooke, as the island capital. In 1607 it became a chartered town, and from 1584 to 1885 was separately represented in Parliament. Market days, Tues. and Sat. Pop. (1921) 11,036.

Newport. County and mun. borough, seaport and market town of Monmouthshire, also the largest



Newport, Monmouthshire, arms

town. It stands on the Usk, 4 m. from its mouth, and is 12 m. from Cardiff and 133 from London, being served by the G.W., L. & N.W., and local rlys. It is chiefly on the W. side of the river; on the E. is the suburb of Maindee, included in the borough in 1889. The chief buildings are the church of S. Woollos, some parts of



Newport, Isle of Wight. Parish church of S. Thomas, rebuilt 1854-56, containing a memorial to Princess Elizabeth

which are Norman and others Perpendicular, the town hall, the offices of the county council, art gallery, and museum and market hall. Others include the technical college, two theatres, the post office, and the Royal Gwent Hospital. There are remains, including two towers, of a castle. Newport does a large shipping trade, mainly in coal and iron, for which it has ample modern docks, covering 160 acres. Other industries are shipbuilding, brass and iron founding, and the manufactures of galvanised iron sheets, steel tubes, nails, engines, boilers, chemicals, railway plant, glass, pottery, etc. During the Great War a large factory was erected here for the repair of war material. A transporter bridge, maintained by the council, crosses the Usk.

Newport owes its origin to its position on the borders of Wales, a castle having been built here about 1200. The townsmen obtained a guild merchant and other privileges, and in 1624 it was made a corporate town. Its modern growth began with the opening of the S. Wales coalfield, and large extensions of docks were made in the 20th century to cope with the increasing trade. In 1839 there was a rising of the Chartists here. The name of the new burgh was given to the place about 1100 to distinguish it from the older Caerleon, and it became Newport. Since 1839 it has been governed by a mayor and a corporation on modern lines. From 1832 to 1918 it united with Monmouth to send a member to Parliament, while from 1918 it has been represented separately. Market

days, Wed. and Sat. Pop. (1921) 92,369.

Newport. Police burgh of Fife-shire, Scotland. It stands on the Firth of Tay, 1½ m. S.E. of Dundee, of which it is practically a residential suburb. It is served by the N.B. Rly., while a ferry connects it with Dundee. Pop. 3,600.

Newport. Seaport of Pembrokeshire, Wales. It

stands on Newport Bay, at the mouth of the Nevern, 10 m. from Cardigan and 6 m. from Fishguard. About 1300 a castle was built here, and it was at one time a flourishing port and a centre of the woollen manufacture, but after 1700 it began to decay, and lost its market rights and its position as a chartered town. There is a small harbour, but it is not easy of access. Pop. 1,300.

Newport. Market town and urban district of Shropshire. It stands on the Shrewsbury canal, 17 m. from Shrewsbury and 145 m. from London, and is served by a joint line of the L. & N.W. and G.W. rlys. The chief building is the rebuilt church of S. Nicholas, and there are a town hall, corn exchange, and grammar school of 1665, also an old market cross. The industries include a trade in agricultural produce and the manufacture of farming implements. Newport was founded about 1100, and the townsmen received a number of privileges, including a guild merchant. In 1551 it was made a chartered town under a high steward, and this constitution existed until 1883. In 1894 it was made an urban district. Market day, Fri. Pop. 3,300.

Newport. City of Kentucky, U.S.A., in Campbell co. It stands at the confluence of the Licking and Ohio rivers, opposite Cincinnati, and is served by the Louisville and Nashville and the Chesapeake and Ohio rlys. The buildings include the city hall, courthouse, etc. Among its manufactures are pianos, tiles, bolts, lumber products, railway stock, and clothing. Settled in 1790, Newport was incorporated in 1795 and became a city in 1850. Pop. 29,300.

Newport. City and port of entry of Rhode Island, U.S.A., the co. seat of Newport co. Formerly the capital of the state, and now a summer resort on Narragansett Bay, 29 m. S. of Providence, it is



Newport, Monmouthshire. The High Street, looking E.



Newport, Rhode Island. Old stone mill, probably ruins of a windmill erected about 1675

served by the New York, New Haven and Hartford Rly. It has a secure and spacious harbour, and several naval establishments. The old state house, now the court house, Redwood Library, and the old market house are of interest. In Touro Park is the Old Stone Mill mentioned by Longfellow in his *Skeleton in Armour* as of Norse origin. Settled in 1638, Newport was chartered as a city in 1784 and rechartered in 1853. Pop. 30,300.

Newport News. City and port of entry of Virginia, U.S.A., in Warwick co. It stands at the mouth of James river on Hampton Roads, 74 m. by rly. S.E. of Richmond, and is served by the Chesapeake and Ohio Rly. and by several lines of steamers. An important commercial and industrial city, it has an excellent harbour, dry docks, and a foreign trade amounting annually to upwards of £14,000,000. It has a flourishing shipbuilding industry, grain elevators, and manufactures of iron goods and lumber products. Coal, maize, flour, and lumber are the chief articles exported. The county buildings and the custom house are the most notable city edifices. Casino Park on the James river is much frequented. Newport News was settled in 1620 and incorporated in 1896. Pop. 35,600.

Newport Pagnell. Market town and urban dist. of Buckinghamshire, England. It stands where the Ousel joins the Ouse, 14 m. from Buckingham and 50 from London. It is served by the L. & N.W. Rly.

and the Grand Junction Canal. The chief building is the church of SS. Peter and Paul, dating in the main from the 14th century, with two fine porches. There is an almshouse, founded in 1280, but now known as Queen Anne's Hospital, after the queen of James I. The centre of an agricultural district, the town was once known for its manufacture of lace. A castle was built here in the Middle Ages, but disappeared soon after it had been taken by the parliamentarians during the Civil War. Market day, Wed. Pop. 4,200.

New Providence. Island of the Bahamas, British W. Indies. It lies between Andros and Eleuthera islands, and is 19 m. long by 10 m. wide. It is covered with undergrowth and contains extensive lagoons. On its N. coast is Nassau, the seat of government of the Bahamas. It is the most densely populated of the islands, and produces various fruits, being specially noted for its pineapples, exported to England and the U.S. in large quantities. Settled by the English in 1629, it was not permanently colonised by them until early in the 18th cent. Pop. 13,600.



Newport News, Virginia. Air view of the water front showing the docks and shipbuilding yards on the James River

Newquay. Watering-place and urban dist. of Cornwall, England. It is on the N. coast of the county on Newquay Bay, 14 m. from Truro, and is served by the G.W. Rly. With a small harbour, it has a shipping trade and is a fishing port, but it is chiefly known as a pleasure resort, visitors being attracted by the fine coast scenery. There are golf links. Market day, Fri. Pop. 4,400.

New River. Artificial waterway in Hertfordshire and Middle-

sex, England. Fed by the Chadwell and Amwell springs in Herts, and by the Lea at Broxbourne, it extends S. about 27 m. to New River Head at Clerkenwell, having reservoirs also in the bors. of Stoke Newington and Hornsey. Constructed by Sir Hugh Myddelton (q.v.), 1609-13, at a cost of £500,000, the undertaking was acquired by the Metropolitan Water Board (q.v.) in 1904, when the New River Co. received as the purchase price £6,534,000 of 3 p.c. water stock, besides certain contingent rights estimated roughly at an additional £500,000. New offices of the Water Board were opened at Rosebery Avenue, on the site of the New River Head, May 27, 1920, at a cost of £300,000.

New Rochelle. City of New York, U.S.A., in Westchester co. It stands on Long Island Sound, 17 m. N. by E. of New York city, and is served by the New York, New Haven and Hartford and the New York, Westchester and Boston rlys. Among many fine residences are several commodious colonial mansions dating from the Dutch and English periods. Leland Castle, noted for its fine interior decorations, is occupied by an Ursuline Seminary. New Rochelle was settled by Huguenots in 1688, incorporated in 1847, and chartered as a city in 1899. Pop. 36,200.

New Ross. Urban dist., market town, and river port of co. Wexford, Ireland. It stands on the Barrow, 13 m. N.E. of Waterford and 102 m. from Dublin, with a station on the Dublin and S.E. Rly. On the other side of the river, in Kilkenny, is Rosbercon, part of the urban dist. The industries include shipping, for which there are quays



New Ross arms



Newquay, Cornwall. Town beach from the Headland, looking east

along the river, tanning and fishing. New Ross was probably built by the English settlers, and was a corporate town surrounded by walls. It was besieged by Cromwell, who destroyed the fortifications. There was fighting here during the rising of 1798. From 1574 to 1800 it was separately represented in the Irish parliament, and from 1800-85 in the British. Rosbercon, which was once a separate borough, had a monastery founded about 1200. Old Ross is a village 3½ m. away with ruins of a castle. Market days, Wed. and Sat. Pop. 5,800.

Newry. Urban dist., market town, and seaport of co. Down, Ireland. It stands on the river



Newry arms

Newry, which has been canalised to afford access for vessels from the sea, 35 m. from Belfast and 63 from Dublin. It is served by the G.N. of I. Rly., and an electric rly., while there is a line from here to Greenore. The town has a technical school. An important port for the export of agricultural produce and cattle, its other industries include brewing, distilling, milling, and tanning, the spinning of flax, and the manufacture of tools, bricks, etc. The older part of the town is separated by the river from the newer part called Ballybot. Newry grew up round an abbey founded in 1175. It was made a chartered town soon after 1600, and until 1800 sent two members to the Irish parliament. From 1800 to 1918 it sent one to the British parliament. Market days, Tues., Thurs., Sat. Pop. 12,000.

News. Something new in the way of tidings or intelligence. The term is generally applied to the contents of a newspaper (*q.v.*).

News Agency. Organization for the regular supply of news to newspapers. While the great agencies supply all kinds of news, some specialise in particular kinds of news, *e.g.* sporting, military, naval, shipping, etc. Notable news agencies are Reuter's, the Press Association, and the Central News, of London; the Associated Press of the U.S.A., the Agence Havas of France, and the Wolff Bureau of Germany.

New Scotland Yard. Name given to the headquarters, on the Thames Embankment, of the London Metropolitan Police. The headquarters of the police were removed from Whitehall to New Scotland Yard in 1890. The building was designed by Richard

Norman Shaw (1831-1912) and is considered to be his finest work. See Metropolitan Police; Police; Scotland Yard.

News from Nowhere. Story by William Morris, first published in America, 1890, and in England, 1891, with the sub-title, *An Epoch of Rest, Being some Chapters from a Utopian Romance*. It was written as a reply to *Looking Backward* (*q.v.*), and presents socialism of a different kind, showing it in practice some two or three centuries hence.

Newsholme, Sir ARTHUR (b. 1857). British physician. Graduating in medicine at the London University in 1880, he specialised in public health, and was medical officer of health at Brighton and Clapham. President of the society of medical officers of health, 1900-1, he became medical officer for the local government board. He was the author of many works on his subject, and was on the council of the imperial cancer research fund. He was knighted in 1917.

New Siberia. Name of three groups of islands (Liakhov, Anjou, De Long) in the Arctic Ocean, in the Russian government of Yakutsk. The largest is Kotelnoi (Kettle Island). They are uninhabited, containing vast beds of petrified wood and fossilised mammoth bones. Area, 9,650 sq. m.

Newsletters. Term once applied to private letters containing news, of which the London letters in provincial and foreign newspapers are a kind of survival. Before printing was invented, letters between friends and relatives contained accounts of current events; sometimes they were written by tutors or other retainers. Then came professional writers of news, who existed concurrently with the newspapers of the 17th century, in the latter part of which they supplanted the newspapers as a result of the stringency of the licensing system applied to anything printed. These news-

letters, as J. B. Williams points out in his *History of English Journalism* (1908), are more valuable sources of history than the printed periodicals of their time. An important example of the historical value of newsletters of an earlier date is to be found in the *Paston Letters* (*q.v.*). See *Journalism*.

News of the World. London Sunday newspaper, founded Sept. 29, 1843, by John Browne Bell. In 1890 it was acquired by Lancelles Carr and George Riddell, Emsley Carr becoming editor in 1891.

New South Wales. Oldest state of the Australian Commonwealth. It lies on the E. coast,



New South Wales arms

between Queensland and Victoria. In 1788, when British authority was first exercised, the name was applied to the whole of the continent E. of meridian 135° E.

Physically the dominant feature is the main watershed, or divide, which follows roughly the trend of the coast 80 m. W. of it in the N. and 40 m. W. in the S.; this divide, known by various names, Snowy Range, Blue Mts., New England Range, etc., separates the short rivers which flow to the E. coast from those which belong to the system of the Murray-Darling. The divide crosses the great plateau, a plain once eroded almost to base level and since uplifted and dissected, so that the peaks are residual mountains.

The process of erosion is, moreover, continuous, and the coastal rivers are still cutting down into the plateau and forcing the watershed W., so that it is now W. of the highest peaks. E. of the divide the coastal area is a plateau carved by the rivers into valleys, gorges, and scarps which present, from the coast, a complicated highland mass. W. of the divide the plateau descends more gently

to the great plains across which the rivers, sometimes in heavy flood, sometimes a mere trickle, or a string of disconnected pools, ultimately reach the Murray. These plains are almost level.

The main rivers of the E. are the Shoalhaven, Hunter, Manning, and Clarence, in all of which either



New Scotland Yard, London. Headquarters of the Metropolitan Police, seen from the Victoria Embankment



New South Wales. Map of the oldest state of the Australian Commonwealth

the main stream or tributaries flow roughly parallel to the coast to a lower course which flows directly coastwards, the whole making a T-shaped or L-shaped plan. On the W. the Murrumbidgee, Lachlan, and Darling make wide sweeps across the plains. The lakes are mountain tarns, as Blue Lake near Kosciusko, isolated basins like Lake George N.E. of Canberra, valley lakes, similar to Lake Bathurst, where a side valley has been dammed with alluvium, river-fed hollows like Lake Menindee, which acts as a regulator for the Darling, or coastal lagoons.

The climate is controlled by the steady procession from W. to E. of a succession of high pressure areas. Between them frequently blows the southerly "buster," a cyclonic wind, which causes a fall of temperature and is usually accompanied by rain and often attains a speed of 50 m.p.h. Throughout most of the state the rains are distributed uniformly throughout the year; in the N.E. the summer, and in the S.W. the winter, is the rainy season. Kangaroos, wombats, phalangers, lyre birds, emus, and lorikeets are characteristic animals.

The plains are grass lands, interspersed with mallee or mulga and brigalow scrub; the plateau, especially on the E., is forested with wattles (acacias), eucalypts or gum trees, which grow after being cut and are ready for cutting again after a few years, making an almost inexhaustible store of timber.

The aridity of the plains, coupled with the ever present possibility of a season of drought, gives great point to the necessity for water conservation; tanks and dams are made at every station, artesian bores occur in the N.W., the stock routes are provided with government-built tanks, and the rivers are tapped.

The minerals occur in definite areas, in the N.E. tin, at Inverell; in the far W. silver lead, at Broken Hill, and opal, at White Cliffs; in the centre of the plateau, coal, at Newcastle and Bulli; in the centre copper, at Cobar; and in the centre and S.E., gold, at Araluen, Cobar, and Bathurst. The wet E. is devoted to lumbering and dairy farming; profitable wheat farming is limited by the rainfall to the area where the fall lies between 20 and 30 ins.; the arid W. is devoted to sheep.

Sugar-cane and tropical fruits near the N.E. coast, vines in the Hunter Valley, and near the middle course of the Murray river, at Albury, are specialised products. Communications depend almost solely on the rlys. Pop. 2,096,393 more than a third of whom live in Sydney.

Government is dual. New South Wales is controlled, in part, by the Commonwealth Parliament, and in part by the local parliament of two houses—the legislative council of 21 members, and the legislative assembly of 90 paid members. Executive authority is vested in a governor, assisted by a lieutenant-governor, and a cabinet of responsible ministers. Botany Bay was discovered in 1770 by Capt. Cook, the first convict fleet arrived in 1788, and transportation was continued until 1850. *See* Australia; consult also New South Wales, A. W. Jose, T. G. Taylor, and W. G. Woolnough, 1912.

New South Wales, BANK OF. Institution founded in 1817. It has over 300 branches in Australasia, mainly in New South Wales, New Zealand, and the Pacific islands. Its head office is at Sydney, and its London office at 28, Threadneedle Street, E.C.

THE NEWSPAPER AND ITS INFLUENCE

G. B. Dibblee, M.A., Author of *The Newspaper*

In addition to the companion article on Journalism, the reader is referred to the articles on The Times, and other great newspapers, both British and foreign, and to those on Delane; Stead; and other eminent journalists. See also Northcliffe, Viscount

A good definition of a newspaper is impossible. It is a periodical publication which contains a record of public events and a selection from current happenings. It contains comments on matters of public interest, criticisms of literature, music, and art, and discussion of commercial and financial questions. It is thus at once a news sheet, a pamphlet, and a review; yet this is only one-half of its functions. On the business side it has generally a considerable system of classified advertising which links together the business world and affords publicity to all kinds of commercial enterprise.

While, in London, probably the daily morning papers are predominant, in the provinces the public get their news chiefly from evening papers, while a vast part of the population read their newspaper only once a week. On the Continent morning and evening newspapers have, perhaps, almost equal rank. In the U.S.A. the daily morning paper seems to carry all before it; but the part played in Europe by popular weeklies is taken by the huge Sunday issues which every daily paper in America carries with it. Outside Europe, the U.S.A., and the British empire there are few papers with an international reputation, and perhaps the only exceptions are *La Prensa* and *La Nación*, of Buenos Aires, and *El Mercurio*, of Santiago, Chile.

Neglecting the fanciful ancestry of a fugitive sheet in Venice and in the England of Elizabeth, the foundation of the press must be attributed to the early 18th century. The brilliant group of writers who succeeded the pamphleteers of the Civil War were the real fathers of the newspaper. From the pamphlets of Bolingbroke and Swift arose the political leading article; from the essays of Addison and Steele the columns of social chat, literary and art criticism.

Foundation of The Times

But the first complete master of English journalism was Daniel Defoe, and the first newspaper to be considered of any account was *The Review*, which he started in 1704.

After Defoe, the next outstanding figure in Anglo-Saxon journalism was John Walter, who founded *The Times* in 1785. He stereotyped the form of the newspaper which is still predominant and was

for 100 years practically the only prevailing type for a daily newspaper in Great Britain. He had enterprise, both as an editor and purveyor of news and as a business man, and he seized the opportunity afforded by the opposition of the commercial classes to the rigorous government of Pitt and his successors to build up *The Times* into a great power. The wars of the period afforded him enormous scope in the prime duty of collecting news. Having been refused the use of the post for his foreign news packets, he established his own system of communication and beat the government with important items of news on several occasions. *The Times*, for example, was the first to announce the news of Waterloo.

Development in the U.S.A.

In the hands of John Walter's son and successor *The Times* continued to grow in power, and made itself specially prominent and successful in exposing the maladministration of the Crimean campaign through the publication of the letters of W. H. Russell. In the provinces the same type of newspaper was reproduced in great journals like *The Scotsman* and *The Manchester Guardian*.

The change that was to bring about a partial revolution in the daily press of the Anglo-Saxon world started in the U.S.A. Here two men, James Gordon Bennett and Joseph Pulitzer, successively developed an entirely different type of journalism, which carried a complete change into the nature and organization of newspapers. In their day primary education was better developed and spread over a wider area of the population of America than in the United Kingdom, and they found a public of vast dimensions able and eager to read, but with no further education. The new public was uncritical as to matters of taste, and perhaps even veracity, and demanded news and amusement. The tide, therefore, set strongly in the direction of sensationalism, and the American system of reporting was developed; this, in its industry, avidity, and enterprise, regardless of expense, exceeded in efficiency the news-collecting organizations of any other country in the world. In the same period, too, was developed the American Sunday newspaper, an *omnium gatherum*

of every conceivable kind of subject and illustration.

The effects of this change were in time to cross the Atlantic, but the British daily press, modelled on *The Times*, remained secure in its supremacy until almost the close of the 19th century. The seeds of the change, however, were sown in 1870 by Forster's Education Act, which slowly began to provide a vastly increased but uncritical public, which demanded an immense change in popular journalism. During these 30 years there began to grow up a duality in British journalism, which can be best described as a distinction between journals for the classes and for the masses. The new public at first demanded jokes and anecdotes and items of solid information, and these began to be supplied by a new type of popular weeklies, of which the three earliest in the field, *Tit-Bits*, *Answers*, and *Pearson's Weekly*, were started in the 'eighties by the houses of Newnes, Harmsworth, and Pearson.

The success of the mass journalism brought fortunes to its promoters, and gradually their enterprise was turned in the direction of daily newspapers. The earliest success in this line was made by the *London Evening News* and the subsequent establishment of a halfpenny morning paper, *The Daily Mail*. This had been preceded by *The Star* and *The Echo*, evening papers, *The Morning* and *The Morning Leader*, and was succeeded by *The Daily Express*. Here was a fully equipped halfpenny morning and evening press, and about the time of the S. African War its popular success began to exert increasing pressure on the great dailies.

Popular British Weeklies

Meanwhile a similar change was coming over the country by the development of popular weeklies with vast circulations. The movement this time began in the provinces, where *The Sunday Chronicle* and *The Umpire of Manchester* led the way, followed by *The Sheffield Weekly Telegraph*, and some Scottish weeklies in Glasgow and Dundee. London soon began to develop its Sunday papers. *Lloyd's Weekly News*, *The Referee*, *The People*, *The Weekly Dispatch*, and *The News of the World* ran up circulations of a million or more, and the number of these papers was considerably increased by the Great War, which also gave a great impetus to illustrated daily and weekly journalism. *The Daily Mirror* and *The Daily Sketch* are predominantly photographic papers, as also are *The Sunday Pictorial* and *The Sunday Herald*. A

noteworthy success of this period was *The War Illustrated*, which, first at twopence and later at threepence, secured and maintained a great circulation. It filled a place midway between the penny picture papers and the expensive weekly pictorials.

The influence of the Great War on the press of Great Britain was remarkable. Circulations bounded up, even though the price of every paper was doubled or raised higher still. From the business point of view there were few changes, except that the relative strength of mass journalism was greatly increased at the expense of the more conservative style of paper. As the power of Parliament waned, the influence of the press on public opinion became practically supreme, and measures necessary to success in the war were carried out by the pressure of public opinion as controlled by the press. The crucial issues of conscription, the control of food prices and rationing, and the great question of the supreme unified command, were all matters in which the press went ahead of public opinion, and educated it to a point where action could be taken.

Revenues from Advertising

It is often forgotten that the power of the press, in the Anglo-Saxon world at any rate, is drawn from the immense revenues derived from advertising. This has given to organs of large circulation a wealth and power not found in the newspapers of other countries, with perhaps the sole exception of Argentina. These great revenues make possible expensive editorial staffs and vast organizations for the reporting and collection of news, which place the British and American press far ahead of that of the rest of the world.

The collection of news has become a matter of so much expense that this form of property ought to be protected under the shield of common law like other property which has been created by enterprise and expenditure. Yet in Great Britain news proper cannot be protected by copyright, and is considered to be the property of the public directly it has been promulgated in any way. In the U.S.A. the question of property or copyright in news remained an open one until the beginning of 1919, when the Supreme Court held that the expense and enterprise required for the collection of news systematically by elaborate organizations constituted a form of property, which deserved protection even if copyright was not expressly secured to cover it.

Few trades have been the subject of such ingenious mechanical inventions as have been at the service of newspapers. The most important of these are the rotary press, enabling thousands of papers to be printed in a few minutes; the construction of circular stereotype cylinders to take the place of type; the invention of the late news or stop press device, enabling small items of news to be slipped into a vacant space even after the main sheets have gone to press, and, finally, the mechanical setting or composing of type by linotype and monotype.

Anglo-Saxon Predominance

Besides the daily and popular weekly press, there are in all countries technical and special newspapers of importance. In France and Italy purely literary reviews and organs of criticism of art and music hold a higher place than they do in the United Kingdom or in the U.S.A., and in Germany and France there is a scientific press which is distinguished by a very high standard of learning. Owing, however, to the enormous predominance of the English language, the Anglo-Saxon world has weekly, monthly, and quarterly organs of great weight and influence which have reached an international importance. Organs such as *The North American Review*, *The Hibbert Journal*, *The Spectator*, and *Punch* are common to the British Empire and the American nation.

In the technical press America holds a superior position through the large numbers and splendid equipment of its weekly organs, but Britain has one or two of acknowledged eminence, such as *The Engineer* and *Engineering*. In illustrated journalism we must not forget that the most brilliant black-and-white artist of his generation, Phil May, practised his art and acquired his fame in Australia. In giant weeklies America and the United Kingdom are about equal, and *Collier's Weekly*, *The Ladies' Home Journal*, *The Illustrated London News*, *The Graphic*, and *The Queen* can be placed side by side.

There are said to be more than 60,000 daily and weekly newspapers in the world. Of these 23,000 are published in the U.S.A., and 13,000 in the British Empire. In Jan., 1921, according to *Mitchell's Newspaper Directory*, there were 2,261 newspapers in the U.K.: in London 440, including 25 morning and 7 evening dailies; in the English and Welsh provinces 1,394, of which 43 were morning and 83 evening dailies; Scotland,

236, including 9 morning and 10 evening dailies; Ireland, 177, of which 10 were morning and 6 evening dailies; British Isles, 14, of which 5 were dailies.

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Newspaper Press Fund.

British institution for the assistance of necessitous members of the literary staffs of newspapers who have become its members, and of their widows and orphans. Incorporated in 1890, it is administered by a council of 18 working journalists, assisted by district committees in all parts of the United Kingdom. To Dec., 1913, the sum of £88,555 had been distributed in grants and pensions. A proportion of the income from donations is distributed to non-members. The names of recipients are not published. The offices are at 11, Garrick Street, London, W.C.

Newstead Abbey. Residence in Nottinghamshire, formerly the seat of Lord Byron. It is 8 m. from Nottingham. An Augustinian priory was founded here in 1170, and at the dissolution of the monasteries the lands passed to the family of Byron. It was made into a residence, and was the seat of

the Byrons until 1818, when it was sold to Col. Wildman, who improved the house a good deal. Of the original abbey the cloister square, with the refectory and chapter house, and the W. front of the church remain. In 1921 the sale of Byron's personal belongings ended the family's association with Newstead. The Leen rises within the park. The village of Newstead is a coal-mining centre with a station on the Mid. Rly. See Byron; Hucknall Torkard.

News vendor. One who sells or distributes newspapers. An alternative term is newsgent. The former word is adopted by the News-vendors' Benevolent and Provident Institution of the United Kingdom, founded in 1839, which has its offices at 16, Farringdon Street, London, E.C.; the latter by the organ of the newspaper distributing trade, *The Newsgent, Booksellers' Review, and Stationers' Gazette*, established in 1889.

NEWT OR EST (Molge). Genus of small, tailed Batrachians, of which Great Britain possesses three species, the common newt, the crested newt, and the palmate newt. The common newt is found in most clear ponds, is slightly over three ins. long, has a smooth skin, and is brown with darker marks on the upper parts, and spotted with black on the yellowish under parts. The male has a high frill extending from the top of the head to the end of the tail. It is much more common than the crested newt, which is nearly twice its size. This species has a warty skin, is dark brown on the back with black spots, has irregular white spots on the sides, and has orange under parts with black spots or patches. It is readily recognized by the fine serrated crest of the male. The palmate newt seldom exceeds three ins. in length. The hind toes in the male are webbed, and it is olive brown on the upper parts, with black spots; the crests are nearly black; and there is an orange band in the middle of the under side.

Newts spend a great part of their time on land, where they lurk among grass and moss under stones and in holes, usually hibernating in such situations. But at the breeding season in spring they are always found in the water, the eggs being deposited singly on the leaves of water plants, the edges of which are folded over them. The egg hatches out as a tadpole, and the course of its development is similar to that of the frog. At first it has external gills and no legs; but in about three weeks the fore limbs are developed, and by

the autumn the metamorphosis is complete. The newt has now four limbs, the external gills have disappeared, and it breathes air by means of lungs.

Newts are carnivorous, feeding upon tadpoles, worms, and insects. The common newt is the only species found in Ireland.

New Testament. Name given to the collection of books in the Bible which contain accounts of the life and teaching of Jesus Christ, the beginnings of Christianity, and the faith of the early Church. These books were written to meet the needs of the Christians of the first century, and it was a considerable time before they were added to the canon of Scripture.

During the lifetime of the apostles and contemporaries of Christ, little importance was attached to the books in comparison with the testimony of the actual witnesses of the events. Even as late as 135, Papias of Hierapolis says, "I did not think that I could get so much profit from the contents of books as from the utterance of a living and abiding voice." It was not until about A.D. 150 that the term "scripture" was applied to any of the writings of the New Testament; after that date the advance was rapid. Marcion the Gnostic was the first to construct a canon of the N.T. consisting of the gospel of Luke (in an expurgated form) and ten epistles of S. Paul. Tatian's *Diatessaron* or *Harmony of the Four Gospels* (A.D. 165) is a proof of the high esteem in which the gospels were held in his time.



Newt. 1. Male of smooth newt, *Molge vulgaris*. 2. Underside of male British palmate newt, *M. palmata*. 3. Female and, 4, male of great water newt, *M. cristata*.

The Muratorian fragment of A.D. 170 is the first attempt on the part of Catholic Christianity to construct a New Testament. It mentions—either by actual statement or inference—all the books of the N.T. with the exception of James, Hebrews, and 2 Peter. By the year 200 the majority of the documents in the N.T. had secured universal recognition in the whole of Christendom. The Western Church, however, rejected James and Hebrews, and the Eastern Church 2 and 3 John and Jude, while 2 Peter had not as yet won recognition at all. Some doubt, too, was expressed about the Apocalypse. Certain sections of the Church were anxious to include in the N.T. such books as the Epistle of Clement, the Didaché, the Shepherd of Hermas, etc.

The controversy with regard to the disputed books continued for over a century, and it was not until the fourth century that the matter was finally settled. Athanasius was the first great writer to use a N.T. identical with the present, and it was largely due to the influence of Augustine that this arrangement received the authoritative sanction of the Church at the synods of Hippo. 393, and Carthage, 397. See Bible; John; Luke; Matthew, etc.

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Newton. District of Hyde, Cheshire. It is 7 m. S.E. of Manchester, with a station on the G.C. Rly. Cotton is the chief manufacture. Another Newton in Cheshire is part of the urban dist. of Middlewich, and there are in England a number of villages of this name. One is near Wisbech, in Cambridgeshire, and another, in the Isle of Wight, is noted for its oysters.

Newton. City of Massachusetts, U.S.A., in Middlesex co. Situated on elevated ground on Charles river, close to Boston, it is served by the Boston and Albany Rly. Manufactures include worsted, silk, machine-shop products, cord, and rubber articles. Newton was settled in 1631, and incorporated under the name of Cambridge in 1688. It received its present name in 1692, becoming a city in 1873. Pop. 46,100.

Newton, THOMAS WODEHOUSE
LEIGH, 2ND BARON (b. 1857). British politician. Born March 18,

1857, he was educated at Eton and Christ Church, Oxford, and entered the diplomatic service, in which he served 1880-86. He was Conservative M.P. for a Lancashire division 1886-98, when he succeeded to the title. In 1915 he was made paymaster-general, and was attached as an assistant under-secretary to the foreign office, being charged with the duty of looking after the interests of the British prisoners of war. In that capacity he led the negotiations at The Hague for exchanges of prisoners with the German government, 1917-18. His family seat is Lyme Park, near Stockport. He wrote a *Life of Lord Lyons*, 1913, under whom he served in Paris, and *Lady Newton wrote The House of Lyme*, 1917.



2nd Baron Newton,
British politician
Russell

Newton, ALFRED (1829-1907). British zoologist. Born at Geneva, June 11, 1829, the son of William Newton, M.P., he was educated privately and at Magdalene College, Cambridge. Having gained a travelling fellowship, he was able to study birds in many parts of the world. Returning to England, he was, in 1866, made professor of zoology and anatomy at Cambridge, where he remained until his death, June 8, 1907. Newton's *Dictionary of Birds*, 1893-96, is the standard work of its kind. He also wrote *The Zoology of Ancient Europe*, 1862; *Zoology*, 1872, 2nd ed. 1894; and was a frequent contributor to scientific journals. See *Life*, A. F. R. Wollaston, 1921.

Newton, ERNEST (1856-1922). British architect. Born Sept. 12, 1856, he was educated at Upping-



Ernest Newton,
British architect
Elliott & Fry

ham, afterwards studying under Norman Shaw. In 1879 he began to practise as an architect, making domestic architecture his speciality. In 1919 he was elected R.A., having from 1914-17 been president of the Royal Institution of British Architects. During the Great War he served in the ministry of national service. He published *A Book of Houses*, 1891, and died Mar. 25, 1922.

SIR ISAAC NEWTON

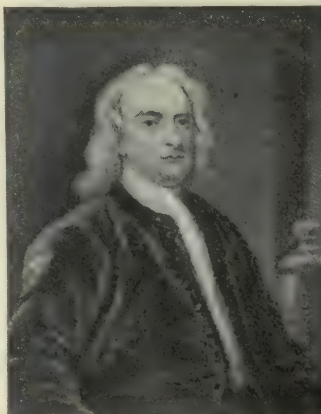
W. W. Rouse Ball, M.A., Fellow of Trinity College, Cambridge

See the articles *Energy*; *Gravitation*; *Light*; *Motion*; *Physics*. Consult also *Relativity*; *Einstein*; *Kepler*; and the biographies of other eminent physicists

Isaac Newton was born at Woolsthorpe, Lincolnshire, Dec. 25, 1642, and educated at Grantham School. In 1661 he entered Trinity College, Cambridge, where he resided a year or more before he began to read mathematics. He proved an apt student, and by the early part of 1665 had made himself familiar with Euclidean geometry, geometrical conics, algebra, trigonometry, analytical geometry, and analysis as then studied; he also worked for his own amusement at optics and chemistry. In 1665 there was an outbreak of plague, and for a couple of years he lived at home, though with occasional visits to Cambridge. Probably at this time his creative powers were at their highest. He had already

ship without the necessity of taking orders. We may picture him at this time as a short man with a broad forehead, a determined square jaw, bright blue eyes, and sharp features with a prominent nose. In character he was modest, deeply religious, and scrupulously just, but easily upset by controversy.

Newton left Cambridge in 1696, and during the rest of his career lived in London, holding offices in the Mint. These offices gave him a sufficient income, he enjoyed a well-appointed home, knew everyone he desired, and was universally honoured and esteemed. His reports on official matters and questions referred to him show him as an acute and well-informed observer, but in science he produced nothing more of special note. Several of his earlier investigations were now published for the first time in forms accessible to the general public. During this period he became involved in two controversies, one on the question whether Leibniz had discovered the infinitesimal calculus independently or had appropriated the idea from him, the other about the publication of Flamsteed's observations. He died at Kensington, March 20, 1727, and was buried in Westminster Abbey. He had been knighted in 1705, and was president of the Royal Society from 1703 until his death.



After
J. Vanderbank

Isaac Newton

discovered the binomial theorem, his use of fluxions may be traced back to 1665, his theory of gravitation originated in 1666, and the beginning of his optical discoveries would seem to have been made early in 1667.

Newton returned to Cambridge in 1668, having been elected to a college fellowship the previous year. For the next 30 years he lived in college, engrossed in the researches on which his fame rests. Soon after his return to Cambridge he was elected Lucasian professor, and as such lectured once a week in one term of each year, supplementing his instruction by personal interviews and the loan of manuscripts. The value of his work was widely recognized, and in 1675 the Crown issued letters-patent, permitting him to hold his fellow-

As regards his researches in pure mathematics, Newton dealt with most of the subjects then read, notably geometry and algebra. The evolution of the calculus was one of the great intellectual achievements of his day; this was invented by him, possibly also independently by others, though its introduction into general use was mainly due to Continental mathematicians. In geometrical optics, Newton developed the mathematical exposition, and for the first time offered an explanation of colour phenomena; he also invented a reflecting telescope, microscope, and sextant. These investigations led him to consider how light was produced, that is, to a theory of physical optics. In this he discussed the wave and corpuscular theories, rejecting the former, which, as then presented, failed to account for the rectilinear propagation of light, but admitting the latter as possible though not altogether satisfactory.

Newton's work on mechanics and gravitation is even more important, for it profoundly affected the ideas of men about the universe. He began with a discussion on the principles of mechanics, and proceeded to treat the motion of bodies in free space in known orbits or under the action of known forces, generalising the law of attraction into the statement that every particle of matter attracts every other particle with a force varying directly as the product of their masses and inversely as the square of the distance between them. Thus gravitation was brought into the domain of science, but what caused it Newton did not profess to know; and here, as in his theory of light, it was his object to present the theory free from speculation as to the mechanism that produced the phenomena.

Having investigated the general theory, Newton applied the results to the chief phenomena of the solar system, and showed that the facts then known about it and, in particular, the path of the moon with its various inequalities, the figure of the earth, and the motion of the tides, accorded with the theory. He prefaced these applications of the theory with four rules which should guide scientific men in making hypotheses; these are now universally accepted, and his formal enunciation of them is a landmark in the history of physics.

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Newton, JOHN (1725–1807). English divine. Born in London, July 24, 1725, son of a shipmaster,



John Newton,
English divine

After J. Russell, R.A.

he had a varied career at sea, and was ordained in 1764. For a time curate at Olney, he became in 1780 rector of S. Mary Woolnoth, London. He was a friend of Cowper, who contributed to his *Olney Hymns*, 1779. He helped Wilberforce in the campaign against the slave trade, and was a Calvinistic force in the Evangelical movement. Of his hymns, *Glorious things of Thee are spoken and How sweet the name of Jesus sounds* are found in most hymnals. He died Dec. 21, 1807.

Newton, RICHARD (1676–1753). English divine. Born Nov. 8, 1676, and educated at Westminster and Christ Church, Oxford, he was ordained in 1704. Six years later he became principal of Hart Hall, Oxford, and immediately devoted himself to enlarging the building, and establishing it as a college preparatory for the ministry. In 1740 the Hall was granted a charter as Hertford College, with Newton as first principal. His chief aim was such economy as should permit young men of slender means to qualify for the Church. Newton was a good classical scholar and linguist, and translated the *Characters of Theophrastus*. He died April 21, 1753. See Hertford College.

Newton, ROBERT (1780–1854). Wesleyan minister. Born at Roxby, Yorkshire, Sept. 8, 1780, he took to preaching as a young man, and entered the ministry in 1812. His forty years' labours were in London, Liverpool, Manchester, and Leeds, but he was constantly travelling and preaching, proving a successful collector of funds for missionary and charitable purposes. Four times president of the Wesleyan conference, in 1840 he went to the U.S.A. to represent the British conferences. He died April 30, 1854. Few preachers of his time exercised greater influence for good. A selection of his sermons was published in 1858.

Newton, THOMAS (1704–82). British divine. Born at Lichfield, Jan. 1, 1704, he graduated at Trinity College, Cambridge, in 1726, and four years later was ordained. Acquiring some reputation in London as a preacher, he became chaplain to the earl of Bath in 1742, and, dabbling in literature, brought out an edition of Milton's works, 1749–52. In 1756 he was appointed a royal chaplain, and, after six years, bishop of Bristol, being made dean of S. Paul's in 1768. He died Feb. 14, 1782. In addition to his Milton, Newton published an autobiography, sermons, poems, and a *Dissertation on the Prophecies*, which Johnson described as "Tom's great work." He was intimate with the Johnson circle.

Newton, SIR WILLIAM JOHN (1785–1869). British artist. The son of James Newton, an engraver, he himself became an engraver. Soon, however, he became a painter of miniatures, quickly making a reputation. He was made miniature painter to the court and painted some large historical group pictures for Queen Victoria. Knighted in 1837, he died in London, Jan. 22, 1869.

Newton Abbot. Urban dist. and market town of Devonshire, England. It is 20 m. from Exeter,



Newton Abbot, Devonshire. Tower of S. Leonard's, the parish church; in the foreground is the pedestal, now surmounted by a lamp-post, from which the first declaration of William III was read, Nov. 3, 1688

and is served by the G.W. Rly., on which line it is a junction. The town stands amid beautiful scenery at the head of navigation of the Teign estuary. The chief buildings are the churches of S. Mary, Wolborough, and All Saints, Highweek, both Perpendicular. The industries include brewing, tanning, and the manufacture of pottery; there are railway workshops. An important horse and cattle fair is held annually. In the centre of the town is the tower of S. Leonard's Church, near which William of Orange's first declaration was read, 1688. Forde House, a Tudor residence, was visited by Charles I and William. Newton Abbot comprises what, in the Middle Ages, were two distinct places: Newton Abbot, the property of the abbot of Tor, and Newton Bushel, the property of the family of Bushel. Market day, Wed. Pop. 13,700.

Newton Grenade. High explosive grenade made in two patterns, one for use from the rifle, and the other to be thrown by hand. The hand grenade consists of a segmented cast-iron, pear-shaped body filled with ammonal. The igniter is a cut-down rifle cartridge, into which one end of a short length of safety-fuse is fitted, the other end being crimped to a commercial detonator embedded in the explosive charge. When required for use, the cap of the grenade is struck a sharp blow and the grenade immediately thrown, exploding in about 4½ sec. The missile complete weighs 1 lb. 5 oz. Its simple construction made it

a popular model during the earlier stages of the Great War, but it was largely displaced by the Mills bomb (*q.v.*). The rifle grenade is of similar general construction, weighs 1 lb., and is charged with ammonal. Into the base of the grenade is screwed a steel rod 18 ins. long to fit the rifle barrel.

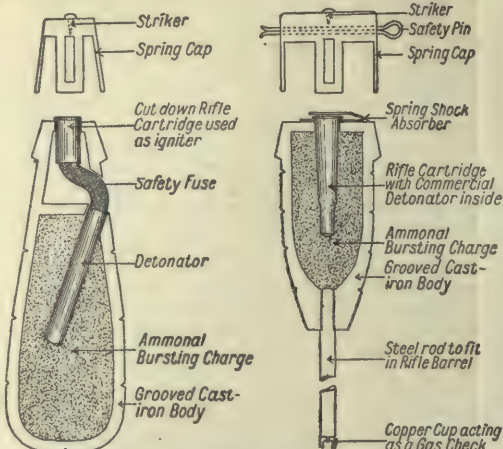
Newton Heath. Suburb of Manchester. It lies to the N.E. of the city proper, and is served by the L. & Y. Rly. and by tramways. The industries include the making of cotton goods, chemicals, etc. See Manchester.

Newton-in-Makerfield. Urban dist. of Lancashire, also known as Newton-le-Willows. It is 16 m. from Manchester, and is served by the L. & N.W. Rly., being a rly. junction. The industries include railway shops, ironfounding, and the making of sugar, glass, and paper. Around are coal mines. A race meeting is held annually, as are cattle fairs. The urban dist. includes Earlestown. Newton gave its name to one of the Lancashire hundreds, and, although never a chartered town, was represented in Parliament by two members, 1559-1832. Pop. 18,400.

Newton's Rings. In optics, a phenomenon which becomes perceptible when a convex lens is pressed on a flat piece of glass. Round the point where the lens touches the glass plane, a series of coloured rings appears. They are produced by the interference of light waves with one another across the thin film of air enclosed between the two glass surfaces; and appear whether the light is transmitted or reflected. If the upper lens can be screwed or pressed tighter down on to the one below, so as to alter the thickness of the air film, the rainbow rings will be seen to move and to change colour. They were described by Sir Isaac Newton in 1675.

Newton Stewart. Police burgh and market town of Scotland. It is mainly in Wigtownshire, but partly (one suburb) in Kirkcudbrightshire. It is on the river Cree, 30 m. W. of Castle Douglas on the Portpatrick and Wigtownshire Joint Rly. Woollens are manufactured. Market day, Fri. Pop. 2,100.

Newtown (Welsh, *Trenewydd*). Urban dist. and market town of Montgomeryshire, Wales. It stands on the Severn, 7 m. W.S.W.



Newton Grenade. Sectional diagrams showing, on left, construction of hand grenade, and, right, rifle grenade

of Montgomery, on the Cambrian Rly. and the Montgomeryshire Canal. It is the principal seat of the Welsh flannel industry, and manufactures tweeds and shawls. The council supplies gas and water. Market day, Tues. Pop. 6,100.

Newtown. Suburb of Sydney, New South Wales. Largely an industrial centre, it has biscuit manufactures and ironworks, and contains also the university buildings and colleges

Newtown. Town in Buckingham co., Tasmania. It is situated on the estuary of the Derwent, 3 m. north of Hobart. Pop. 3,400.

Newtown. Town in Grant co., Victoria, Australia. It is 93 m. by rail from Melbourne, in the Ballarat district. Pop. 5,900.

Newtownards. Market town, co. Down, Ireland. It is 1 m. from the head of Strangford Lough and 14 m. by rail E. of Belfast on the Belfast and County Down Rly. The chief buildings are the town hall, parish church, a fine cruciform building, and other churches. Of the old church, the nave, tower, and an aisle still stand.

The industries are linen and muslin manufacture, flax-spinning, and market-gardening. Markets and fairs are held here. Market day, Sat. Pop. 12,000.

Newtown Stewart. Market town, co. Tyrone, Ireland. It stands on the river Mourne, 24 m. by rail S.E. of Londonderry on the G.N. of I.R. The town was granted to William Stewart, after whom it was named, by Charles I; the castle was dismantled, and the

town burned down by James II. Linen weaving is carried on. Market day, Mon. Pop. 1,000.

New Ulm. City of Minnesota, U.S.A., the co. seat of Brown co. It stands on the right bank of the Minnesota river, 87 m. S.W. of St. Paul, and is served by the Minneapolis and St. Louis and the Chicago and North Western rlys. Stock-rearing and agriculture

are extensively engaged in locally, and the city has grain elevators and marble works, and manufactures cigars, flour, bricks, machine-shop products, and shirts. New Ulm was settled in 1854 and incorporated in 1876. Pop. 6,700.

New Westminster. Town of British Columbia. It is 80 m. from Victoria on the Canadian Pacific and local rlys., and stands on the Fraser river, here about a mile wide, 15 m. above the mouth, at the head of the delta. Its chief industries are salmon-canning and the dressing and shipping of timber. Founded in 1858 by Colonel Moody, it was, before the union with the rest of Canada, the capital of the mainland. Pop. 13,200.

New Year's Day. First day of the year. The ancient Attic year began with the new moon after June 21, and the Romans began their year on March 1. The beginning of the Roman year was changed by Julius Caesar to Jan. 1. In England the Anglo-Saxon year began with Dec. 25; this was altered at the Conquest to Jan. 1.

In the Middle Ages the Christian year began generally on March 25 until the adoption by Catholic nations of the Gregorian calendar of 1582, by England not till 1752, when Jan. 1 became New Year's Day. Among customs observed on New Year's Eve and Day in England, Scotland, and elsewhere may be mentioned the ringing of the church bells at midnight, and Hogmanay (*q.v.*). In Scotland and parts of England "first footing" survives; the first person who enters the house on New Year's Eve brings good luck according as, in different localities, he is light or dark haired. New Year's gifts are a survival of Roman custom.



Newton-in-Makerfield urban district seal



Newtownards

New York. State of the U.S.A., usually called the empire state. It includes many adjacent islands, of which Long Island, Staten Island, and Manhattan Island are the chief. The surface is diversified. In the west and centre, approaching to Lakes Erie and Ontario, it consists of a level tract, part of which belongs to the Allegheny plateau. The central portion contains the "finger lakes" (Canandaigua, Seneca, Cayuga, and others), which occupy depressions formed by the Laurentian glaciers.

The mountainous regions of the E. are separated by the Mohawk, whose valley connects at right angles with those of Lake Champlain, Lake George, and the Hudson. N. of the Mohawk lies the picturesque Adirondack range, which attains in Mt. Marcy an alt. of 5,345 ft., and S., to the W. of the Hudson river, are the Catskill group (highest summit, Slide Mt., 4,205 ft.), and an extension of the Pennsylvanian Mts. The principal rivers are the Hudson, flowing N. to S., its right bank affluent the Mohawk, the St. Lawrence, which forms part of the N. delimitation, the Delaware, Niagara, Oswego, Black, and Genesee. Numerous lakes occur in the Adirondack Mts., and the rivers

are noted for their picturesque falls. Waterway communication is maintained between Albany on the Hudson and the St. Lawrence and Great Lakes by means of the Champlain Canal to the N. and the New York State Barge Canal to the W.

New York is essentially a manufacturing state, and its exceptional means of transport by the lakes, rivers, 638 m. of canals, 8,480 m. of steam, and 4,750 m. of electric rlys., make it the greatest commercial state of the Union. The leading industries are clothing, automobile, flour, tobacco, paper, wood pulp, boot and shoe, and machinery manufactures, printing and publishing, brewing, and slaughtering and meat-packing. Next to manufactures, agriculture is of chief importance, and mining also is a valuable interest. Saline, chalybeate, sulphur, and other springs are found in various parts of the state. Higher education is provided at several universities and a large number of colleges. Two senators and 43 representatives are returned to Congress. New York, Buffalo, and Rochester are the principal cities, and Albany is the capital. Area, 49,204 sq. m. Pop. 10,385,000.

the Singer tower and the City Investing building in Broadway, are taller still; but most remarkable, and most successful architecturally, is the Woolworth building opposite City Hall Park. With its 55 storeys, it is, with the exception of the Eiffel Tower, the loftiest structure ever built.

The Home of American Finance

In the midst of these skyscrapers, in its own churchyard in Broadway, stands old Trinity Church, and from its very door opens Wall Street, which with Broad Street is the home of American finance. Here is the United States sub-treasury, on the site of Federal Hall, where the first American congress sat; here are the offices of such great institutions as J. P. Morgan & Co., the New York stock exchange, and the National City Bank. All round are tall buildings occupied by banks, financiers, engineers, lawyers, and important companies; and in this district the cotton and the produce exchanges, the chamber of commerce, and the New York clearing house have their quarters. The Consolidated Stock Exchange has its own building.

The municipal activity of New York centres in the beautifully proportioned century-old City Hall. It stands in its own park, on the edge of which is the gigantic municipal building, the impressive architecture of which is completely spoiled by its site. The general post office, with the United States law courts over it, faces the City Hall, while behind it are the state civil courts.

Broadway, the great thoroughfare which runs from the Battery through the entire city until it becomes the high-road to Albany, now traverses a rather uninteresting section devoted to the wholesale dry goods trade. Parallel to it to the E. is the Bowery, once renowned for every form of cheap vice, but now reformed to dull respectability, while between them are the criminal courts and the Tombs, the Newgate of New York. Five Points, the slums described by Dickens, has been swept away, but the East Side, the densely populated district between the Bowery and the East river, still retains its peculiar picturesque quality.

It is a tenement house area, too often the place where the poor European immigrant first tastes American life. Certain streets have distinct national characteristics; the Chinese are in Mott Street, the Italians in Mulberry Street, the Russians in Henry Street, and the Jews everywhere. The East Side has a life of its own. Its politics are

NEW YORK: AMERICA'S WONDER CITY

L. R. Holme, M.A., Asst. London Correspondent, New York Times

There are in this work articles on all the cities of the U.S.A., as there are on the states. See also Brooklyn; Hudson; Long Island; Manhattan; Metropolitan Museum; and colour map

New York is the financial and commercial metropolis of the U.S.A. Situated at the head of New York Bay and at the mouth of the Hudson or North river, it is a great seaport and the centre of an important industrial district. Pop. (1920) 5,459,463.

In 1609 Henry Hudson discovered the river named after him and the island of Manhattan, and in 1621 the Dutch founded the colony of Nieuw Amsterdam at the S. end of the latter. In 1664 the English captured it and called it New York, after the duke of York, afterwards James II.

During the revolutionary war it was the English headquarters after the evacuation of Boston, and it was surrendered to the Americans in 1783. From 1785 to 1790 it was the seat of the U.S. government.

Since 1897 the greater city of New York has included five boroughs, having a total area of 326 sq. m. Of these boroughs, Manhattan, New York city proper, is the most

important. It is of peculiar shape, a tongue of land from 10 to 13 m. long and about 2 m. wide, running almost N. and S. between the North or Hudson river on the W., which separates it from New Jersey, and the East river, the waterway which cuts it off from Long Island on the E. Within this elongated strip over 2,000,000 people live and half as many again earn their daily bread, with the result that a mere topographical accident has had a profound effect on New York's development.

The Famous "Sky-line"

Ocean travellers passing through The Narrows, a mile broad, at the entrance to the harbour, see across a 5 m. stretch of placid bay a great pile of lofty buildings. Sky-scraper crowds on sky-scraper, tower on tower, and the green strip of Battery Park alone divides them from the water's edge. Even the grassy slopes and obsolete fortifications of Governor's Island, or the statue of Liberty, rising 151 ft. on Bedloe's or Liberty Island, cannot divert the eye from that fantastic castellated group.

Already the sky-scrappers rise commonly to 300 ft. Several, as



New York City arms



1. The Aquarium, formerly Immigration Office. 2. Battery Park. 3. Whitehall Bldg. 4. West Street Bldg. 5. Bowling Green Bldg., so named after a bowling green in the early colonial city. 6. Customs House, near which are offices of the great shipping companies. 7. Standard Oil Bldg. 8. U.S. Express Co. 9. Adams Express Co. 10. Trinity Bldg.

11. The American Society. 12. Bankers' Trust. 13. Equitable Life Ass. Co. 14. Tower of Singer Bldg. 15. Woolworth Bldg. 16. Park Row Bldg. 17. N.Y. Herald Office. 18. N.Y. World Office. 19. Municipal Bldg. 20. Tower of Metropolitan Life Ins. Co., Madison Square. In the background the Hudson River and the Jersey shore are seen

NEW YORK: AERIAL VIEW OF THE DOWNTOWN BUSINESS SECTION OF THE CITY

sturdy and aggressive; the Yiddish theatre is flourishing and original. Many who have made money are loth to leave it, and Grand Street has its fashions and conventions no less than Fifth Avenue.

The East river is too swift for shipping, but on both sides of the North river the great liners berth. The docks extend in New York from the Battery to West Fiftyninth Street, the Cunard, the White Star, the Anchor, and other great steamship companies having their piers from about 14th to 23rd Street.

The Streets of the City

For 2 m. from the Battery the street plan of New York is irregular, but after that the usual American rectangular plan prevails. The streets run roughly E. and W., 20 to the mile; the avenues N. and S., seven to the mile. Numbers are the rule, but in the N. districts many avenues adopt names, as Columbus or Amsterdam. Broadway, however, runs diagonally across the checker-board until at 106th Street it becomes the continuation of 11th Avenue.

The extraordinary celerity with which New York districts alter their character has deprived the streets just N. of 14th of their recent pre-eminence as a shopping and theatrical centre. Washington Square and a few blocks at the S. end of Fifth Avenue still remain the homes of old New York families, in spite of the spread of business there, and Greenwich clings desperately to its reputation as an artistic and rather Bohemian centre.

To the visitor the heart of New York is now the district contained within Broadway and Fifth Avenue, 26th and 59th Streets. Here are the great hotels and restaurants, the Metropolitan Opera House, and Carnegie Hall, the best theatres, and the big department stores. In this region is focused all the luxury, all the amusement, that money can buy, and it presents such a concentration of the glitter of life in a small space as no other city can show.

Times Square, which is dominated by the Times building, is the Piccadilly Circus of New York, and its pavements, when lit up by the electric signs of the "Great White Way," are as crowded at midnight with pleasure-seekers as is 34th Street at noon with shoppers and bargain-hunters. In this district may be found also the New York public library, in its white marble home; S. Patrick's Roman Catholic cathedral, with its stately Gothic spires; the galleries of the National Academy of Design, and many of the principal churches.

From 59th to 110th Street stretches Central Park, dividing New York between Fifth and Seventh Avenues. It is the finest of all the city's fine parks, and it contains the Metropolitan Museum of Art, while the American Museum of Natural History is in Manhattan Square adjoining it. Along the E. side of the park are the mansions of millionaires who have given Fifth Avenue its social prestige.

The Upper West Side, on the other side of the park, is also a residential district, but there are many apartment houses. Along Broadway these have been brought to the highest point of perfection, and, sometimes occupying an entire block, and rising to 12 or 14 storeys, accommodate great numbers in luxurious style. Riverside Park is a pleasant promenade along the bank of the North river, and Riverside Drive, just above it, contains another fine row of apartment houses. Two great national memorials, the Soldiers' and Sailors' Monument, and Grant's Tomb, stand on the Drive, while a little E. of it is a remarkable collection of fine buildings. The library, lecture halls, laboratories, and dormitories of Columbia University crown Morningside Heights, and close by are Barnard College for women, and the Union Theological Seminary. The as yet unfinished Episcopal cathedral of S. John the Divine and S. Luke's Hospital are also found on Morningside Heights above 110th Street.

New York's Suburbs

At 125th Street comes Harlem, once a separate town, and still a distinct centre, the home of the middle classes, and there is room in Manhattan, on the W. side, for another large district of comfortable, but not quite so luxurious, apartment houses. Here is the City college, the apex of the municipal educational system, while on University Heights, in the borough of the Bronx, are the new buildings of the university of New York, with the remarkable Hall of Fame for the commemoration of distinguished Americans. Of the other boroughs of New York City the Bronx (pop. 736,016) is for the most part a typical suburban tract, but much of it is as yet undeveloped. It contains zoological and botanical gardens. Queensborough (pop. 469,000) is a growing industrial and residential centre, while Richmond borough, or Staten Island (pop. 116,500), is in the main a rural region, with farms and country towns. Brooklyn, on the other hand, was formerly a separate city, and had a municipal, social, and intellectual life of its own.

Four great bridges over the East river, the Brooklyn, the Manhattan, the Williamsburg, and the Queensborough, and several tunnels, join Manhattan to Brooklyn and Queens, and four tunnels and numerous ferries join it to New Jersey. They have been worked into the wonderful interurban transportation system that its hurrying millions have forced New York to develop. In Manhattan almost every avenue has its tramway line, and there are four N. and S. elevated railways; while the tube system has been recently extended at a cost of over £70,000,000 to cover the entire city except Staten Island. Enormous engineering difficulties have been overcome, and the train service in the "rush hours" is maintained with wonderful efficiency. Transportation from E. to W. is generally inadequate.

Railways and Government

Three great trunk lines run into New York, the New York Central, and the New York, New Haven, and Hartford at the Grand Central station, and the Pennsylvania Railroad at the Pennsylvania Terminal, both of these "depots" being magnificent buildings. Several other important lines have their termini on the New Jersey shore of the North river.

New York is governed by a mayor, elected for four years, and the Board of Estimate and Apportionment, consisting of the mayor, the controller or financial officer, the president of the board of aldermen, and the presidents of the five boroughs, and the board of aldermen, numbering 67. All the important municipal legislation and the initiation and carrying out of the great schemes of development are in the hands of the board of estimate, while the mayor is charged with the main administration.

New York to-day is obliged to undertake public works of great magnitude. Thus it has enlarged its water supply, bringing water 86 m. from the Ashokan reservoir, through a tunnel which cost over £33,000,000 to build. It has also spent £22,000,000 on its four bridges over the East river.

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New York UNIVERSITY. University of the U.S.A. Its work is carried on partly in its old buildings in Washington Square, partly in the halls and lecture rooms recently erected on University Heights in the Bronx. It has over 7,000 students, and 500 teachers.

New York West. Town of New Jersey, U.S.A., in Hudson co. It stands on the Hudson river, 34 m. by rly. S.E. of Pittsburg, and is served by the Baltimore and Ohio, and the Pittsburg and Lake Erie rlys. It manufactures silk, embroideries, buttons, cotton-seed oil, cloth, and sugar. Pop. 29,900.

New York Bay. Inlet on the Atlantic coast of the U.S.A. It comprises the upper and lower bays, connected by a channel called The Narrows. The upper bay lies at the mouth of the Hudson river, locally called the North river, and on its shores is the city of New York. It is joined to Newark Bay by a channel called Kill Van Kull. The lower and larger bay separates Long Island and Staten Island from the mainland of New Jersey.

New York Evening Post, THE. Daily newspaper established in New York City in 1801 by Alexander Hamilton. Its editors have included William Cullen Bryant, John Bigelow, Carl Schurz, and E. L. Godkin. James (Viscount) Bryce once described it as "decidedly the best paper printed in the English language." In June, 1881, it acquired The Nation (New York), which has been issued under its auspices since July 1 of that year. In Aug., 1918, it was purchased from Oswald G. Villard by T. W. Lamont, of the firm of J. P. Morgan & Co.

New York Herald, THE. Daily and weekly newspaper established as The Morning Herald in New York City, May 6, 1835, by James Gordon Bennett. The first of its contemporaries to make a regular feature of financial, shipping, and religious news, it was also at the outset a non-party organ, devoted to news rather than opinion. The present title was adopted Aug. 31, 1835. Its "scoops" began in 1863 with an exclusive account of Gettysburg. It sent Stanley to find Livingstone in 1869, and, in conjunction with the London Daily Telegraph, commissioned Stanley's journey to Central Africa in 1875. It equipped the Jeannette expedition to the Arctic in 1879. Its weekly edition was begun in Dec., 1836; its European (Paris) edition, Oct. 3, 1887. A London edition started in 1889 lasted less than 18 months. When the French government left for Bordeaux, Sept., 1914, the Herald staff remained in Paris.

The paper was purchased by Frank A. Munsey in Jan., 1920, and merged in The New York Sun, the morning edition being called The New York Herald, and the evening edition The Evening Sun. See the historical supplement, issued May 7, 1916; Memoirs of Bennett and His Times, I. A. Pray, 1855.

New York State Barge Canal. Waterway from Buffalo on Lake Erie to Troy on the Hudson river. It is 352 m. long, to which its Oswego and Cayuga-Seneca tributaries add another 100 m. Its minimum depth is 12 ft., its bottom width varies from 75 ft. to 200 ft., and it is served by 57 locks. Designed to accommodate 1,000-ton barges, it makes it possible to bring cargoes from the head of Lake Superior to special barge terminals in New York Harbour with only one transshipment at Buffalo. It was opened May 15, 1918, and cost \$30,000,000. It follows the line of the old Erie Canal, and use has been made of lakes Oneida, Cayuga, and Seneca, and of the Mohawk, Oneida, Oswego, and Huron rivers, the levels of which have in places been altered by dams to suit the needs of the canal.

New York Sun, THE. Independent morning newspaper, with a weekly edition, established in New York City, Sept. 3, 1833, by Benjamin H. Day. It maintained its own home and foreign correspondents, independently of the Associated Press, a rival to which it founded in Laffan's News Agency. From an early date it adopted an abolitionist policy on

the slavery question. In 1868 it passed into the hands of Charles A. Dana, who edited it until his death in 1897. Acquired by Frank A. Munsey, 1916, it was later issued as The Evening Sun. See The Story of the Sun, F. M. O'Brien, 1917.

New York Times, THE. Independent Democratic morning newspaper, established in New York City by H. J. Raymond, Sept. 18, 1851. It issues a weekly edition, notable for its literary section, The New York Times Saturday Review. In 1896 it came under the control of Adolph S. Ochs and C. R. Miller.

New York Tribune, THE. Republican daily and weekly newspaper, established in New York City, April 3, 1841, by Horace Greeley. He remained its governing editor until his death in 1872, being succeeded as chief proprietor and principal editor by Whitelaw Reid, who acted as The Tribune's correspondent in the Civil War, and had been a leader writer since 1865. The Tribune, which set the example during the Franco-Prussian War of using the cable for war correspondence, consistently supported the Allied cause in the Great War, its war leaders, by Frank H. Simonds, attracting wide attention.

New York World, THE. Democratic daily and weekly newspaper, founded in New York City in 1861. From 1876-83 the property of Jay Gould, it was bought by Joseph Pulitzer, under whose control it became one of the most widely circulated newspapers in the U.S.A.

NEW ZEALAND: A BRITISH DOMINION

B. C. Wallis, Author of A Geography of the World

This Encyclopedia contains articles on Dunedin, Wellington, and other important places in the Dominion. See the biographies of Seddon, and other New Zealanders of note; also Geyser

New Zealand is a British Dominion in the South Seas. Politically it embraces the two main islands, North and South, the small Stewart Island separated from the S. end of S. Island by Foveaux Strait, and many islands in the neighbouring seas. Of the latter the Auckland and Kermadec groups, and the smaller Campbell, Three Kings', Antipodes, and Bounty islands are uninhabited; the Chatham and Cook groups contain over 13,000 people; in addition the Dominion is the mandatory for the former German colony of Western Samoa.

The two large islands cover an area of 102,250 sq. m. Physically,

they form part of the great festoon of islands which begins at New Guinea, ends at Antipodes Island, and includes New Caledonia. They are separated by the 1,000 m. of the deep Tasman Sea from the E. coast of Australia.

N. and S. islands are in striking contrast. South Island consists of a great mt. range, the Southern Alps, alpine in magnitude, the culminating peak, Mt. Cook, being 12,349 ft. in elevation, with alps or summer pastures, alpine lakes, glaciers, and snowfields. The W. slopes almost reach the shore, and are clothed with mighty fern forests; in the S. Milford Sound is the best known fiord; the E. slopes reach the Canterbury Plains.

N. Island consists of a highland reaching from Mt. Egmont in the S.W. to East Cape in the N.E., and two peninsulas; the first of



New Zealand arms



1. Airview of the Statue of Liberty, on Bedloe Island.
2. Tomb of Ulysses S. Grant, Riverside Drive.
3. Public Library, with accommodation for over 3,000,000 volumes.
4. Pennsylvania Railroad Station, one of the largest is the U.S. sub-treasury and statue of Washington

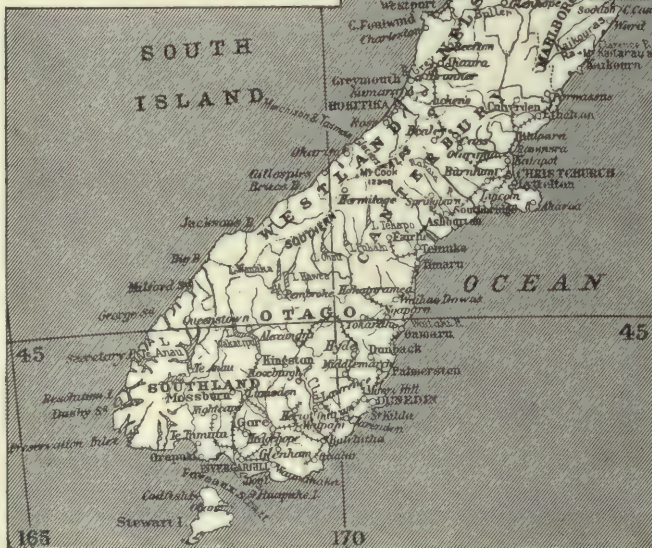
- and best designed stations in the U.S.A.
5. 42nd Street, a busy cross-city thoroughfare, showing the volume of motor traffic characteristic of the city.
6. Wall Street, looking towards Trinity Church. In right foreground

NEW YORK: SCENES AND LANDMARKS IN THE METROPOLIS OF THE U.S.A.

No. 1 by courtesy of U.S. Army Air Service

these is a lowland terminating in the N.W. in Cape Maria van Diemen, the second is mountainous and reaches Cook Strait. None of the mountain ranges is related to the Southern Alps; the Ruahine and Tararua ranges of the S.E. peninsula are, however, related to the Kaikouras ranges in the N.E. of S. Island.

The Rotorua dist. is world-famous for its hot springs, geysers, and sinter terraces. Of the volcanoes, snow-capped Ruapehu, 9,175 ft., has at its summit a crater lake of warm water, which boils and is heaved into the air and splashes the surrounding ice cliffs; Ngauruhoe, 7,515 ft., and Tongariro, 6,140 ft., are quiescent; Mt. Egmont, 8,260 ft., is extinct; Whakaari, White Island, in the Bay of Plenty, is active. In S. Island the only evidence of the earth's interior heat is provided by hot springs, which occasionally bubble into icy cold water flowing away from a glacier snout. Lakes Taupo, 238 sq. m. in extent, and Rotorua in N. Island differ in character from Wakatipu, 114 sq. m., Te Anau, 132 sq. m., and the smaller alpine lakes of S. Island. Of the S. glaciers Tasman, 18 m. long, is reputed to be the largest



New Zealand. Map of the British Dominion in the South Pacific, S.E. of Australia, with a total area of 106,240 sq. miles

which cannot fly, keas, cormorants, and penguins; lizards, butterflies, and moths. Europeans introduced the farm and domestic animals; deer, trout, pheasants, and quail; rabbits, stoats, and weasels, which became a scourge.

The flora is essentially of the forest type; the tree ferns of Westland grow in great profusion; the kauri of the N., the rimu, and similar trees are due to the heavy rains; the beeches of S.I. are a mountain type; New Zealand flax or phormium is a characteristic swamp growth. The only native grasses are tussock grasses; the turf grasses have all been introduced, mainly from English seed.

The dominant industry is sheep-rearing; parts of N.I. in the Wellington peninsula have more sheep per sq. m. than any equivalent area in the world; this industry was a comparative failure when the wool was the only saleable product; New Zealanders were the pioneers in refrigerated steamships, and Canterbury lamb entered into the meat trade of the world.

Dairy farming, mainly for the production of butter and cheese, is of growing importance. Crops of

glacier outside the Polar regions; Murchison, 11 m. long, is next in size. The Waikato and Wanganui in N.I., and Clutha, Buller, and Grey in S.I. are the chief rivers.

The climate is equable and provides probably the best example in the world of the insular type; N.I. is warmer than S.I. The

rains are sufficient; in N.I. they exceed 35 ins. everywhere, in S.I. the W. coast is very wet, over 100 ins. annually at Hokitika, and the E. plains are dry, the Canterbury Plains having less than 30 ins. The indigenous animals include two kinds of bat, the only land mammals; kiwis and other birds

wheat, oats, and barley are grown for local consumption. Kauri gum is dug in the Auckland peninsula, phormium is gathered from both wild and cultivated plants, timber is cut from the forests, and these, with the animal products, make up the chief exports, except for coal and gold. Coal is mined on the W. coast of S.I., and gold in the Thames peninsula. In the valley of the Clutha, alluvial gold is dredged; New Zealanders were the pioneers in constructing dredgers suitable for such work. Communication is maintained by a growing rly. system connecting the chief towns and supplemented by a coastal steamer service. The principal exports are wool, frozen meat, butter, cheese, tallow, hides, skins, and phormium flax and tow. Three-quarters of the total exports are to Britain. More than a quarter of the imports consists of articles for personal wear, textiles, hosiery, boots, and shoes; metal goods, including motor-cars, and oils come next in order. The United Kingdom, Australia, and U.S.A. supply most of the imports. The Dominion, officially a colony 1840-1907, is governed by a governor-general and a general assembly, consisting of a legislative council of 37 paid members and a house of 80 paid representatives, upon a system of constitutional cabinet government.

Experiments in State Socialism

New Zealand early became noted for legal enactments of the nature of experiments in state socialism. The Public Trust office was established in 1872, three years earlier a Government Annuities and Life Insurance office was inaugurated; a fire department was added later. The use of the Government telephone is almost universal. Government depots sell coal obtained from government mines and carried by state railways. Maternity and other hospitals are government institutions. Old-age pensions have been granted since 1898. Labour legislation began with the Employment of Females Act of 1873, which established an 8-hour day for women. Since 1891 all factory labour has been controlled, sweating abolished, and minimum wages determined. In addition a system of industrial conciliation and arbitration has been developed. Compulsory acquisition of land for closer settlement has been possible since 1892.

The pop. numbers 1,320,000; Auckland, 158,000, is the largest town; only Wellington, Christchurch, and Dunedin in addition have more than 50,000 inhabitants; no other town contains 20,000 people. Five p.c. of the people are

Maoris, one of the most intelligent native races of the British Empire.

New Zealand was discovered by Tasman in 1642; he named Cape Maria van Diemen. The next European visitor was Capt. Cook, who came in 1769, 1773, 1774, and 1777. British, French, and Spanish ships arrived during the next 20 years. In 1815 the first mission was established in the Bay of Islands. The first attempt at colonisation was made in 1825, but failed. In 1840 Wellington was founded, and Capt. Hobson proclaimed the sovereignty of Queen Victoria. Other settlements, Auckland, Nelson, etc., followed during the next decade.

The most important subsequent events were the Maori Wars, 1860-70, the discovery of gold in 1867, and the adoption of refrigeration.

THE GREAT WAR. During the Great War the Dominion furnished 91,914 volunteer troops and 32,270 conscript troops, making a total force of 124,184. In Aug., 1914, a New Zealand force, acting in conjunction with British and Australian warships, seized German Samoa, which was garrisoned throughout the war by New Zealand troops. On Oct. 16, 1914, the New Zealand expeditionary force of 8,061 of all ranks, sailed for Egypt. After a period of training in Egypt, during which it helped to defend the Suez Canal, the force went to Gallipoli, April, 1915, and along with the Australians—the combined force known as the Anzacs—took part in the landing at Anzac Cove and in many subsequent operations. After the withdrawal the New Zealand force returned to Egypt. There it was reorganized and reinforced, and as a division went to France in April, 1916. The Mounted Rifles brigade remained in Egypt as part of the Anzac Mounted division, which distinguished itself against the Turks in Sinai and Palestine.

The N.Z. division took part in the first battle of the Somme, and, with the 41st, captured Fiers on

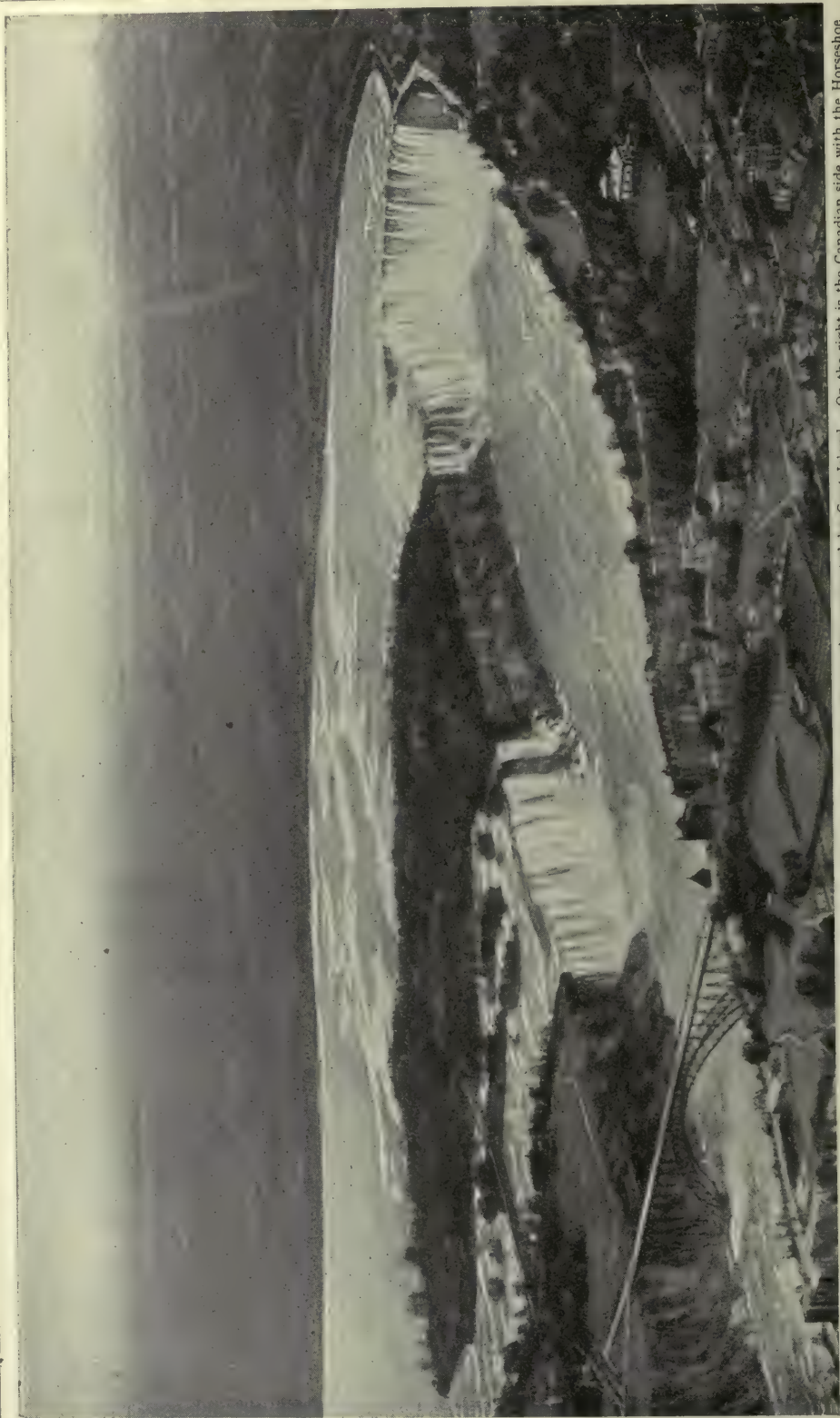


New Zealand. Map showing the distribution of resources and products throughout the Dominion

Sept. 15, 1916. In 1917 it distinguished itself at the battle of Messines and in the third battle of Ypres, in which it stormed Gravenstafel in the operations against Passchendaele ridge. In March, 1918, it helped to defeat the great German offensive, and in the subsequent Allied advance defeated the Germans at Beaucourt and captured Puisieux and Serre, Aug. 15, and the ruins of Bapaume, Aug. 29. One of its outstanding exploits was the recapture of Le Quesnoy on Nov. 5, when the men scaled the ramparts with ladders. In addition, New Zealand furnished a tunnelling company which did splendid service in France, and also helped to rebuild the bridges destroyed by the Germans in their retreat in the autumn of 1918. New Zealand casualties were: Killed: officers, 735; other ranks, 15,401; wounded: officers, 1,688; other ranks, 39,061.

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New Zealand, BANK OF. Institution established by an Act of the New Zealand Parliament, 1861. Part of its capital is guaranteed by the government, which holds another £750,000 thereof. It acts as banker to the N.Z. government, and has over 200 branches in Australia, New Zealand, and the



View taken by an airman from above the town of Niagara Falls, Ontario, showing the two great cascades, separated by Goat Island. On the right is the Canadian side with the Horseshoe Falls, 3,100 ft. across and 158 ft. high. The American Falls are 1,080 ft. across and 167 ft. high. On the left is the Upper Steel Arch Bridge connecting Canada with the U.S.A.

NIAGARA FALLS, THE AGE OF WHICH IS ESTIMATED AT BETWEEN 20,000 AND 35,000 YEARS

islands of the Pacific. The head office is at Wellington, and the London office at 1, Queen Victoria Street, E.C.

New Zealand, UNIVERSITY OF. State university of New Zealand. An examining body only, it was founded in 1870. It consists of the university of Otago at Dunedin, Canterbury College at Christchurch, Auckland University College, and Victoria University College at Wellington, where are the headquarters. For agricultural students there is a recognized college at Lincoln. It has an agent at 88, Gower St., London, W.C.

New Zealand Cross. Decoration for bravery. Instituted in 1869, it is awarded to those "who



may particularly distinguish themselves by their bravery in action, or devotion to their duty while on service." It was first awarded only to members of the local militia, volunteers, or armed constables. It consists of a silver Maltese cross, similar to the V.C., only the latter is of bronze. A gold star appears on each limb, and in the centre in a circle surrounded by a gilt laurel wreath is "New Zealand." On the reverse is the name of the recipient. A crown is placed above the uppermost limb. The ribbon is crimson.

New Zealand Flax (*Phormium tenax*). Perennial herb of the natural order Liliaceae, native of



New Zealand Flax. Left, sword-shaped leaves; right, flower-head with tubular blooms

New Zealand. The sword-shaped, leathery leaves are from three to six ft. in length, arranged in two ranks, the older leaves clasping the younger at their base. When old they split at the tip. The flower-stem is about 15 ft. high, branched above, the branches supporting the curved, tubular, red or yellow flowers. The leaves yield beautiful

and strong fibres, which Capt. Cook found served the natives for a variety of purposes—clothing, nets, twine, etc.—but the presence of gum in the leaves, difficult of removal, has made its preparation for export too costly.

New Zealand Spinach or **New Zealand Ice-plant** (*Tetragonia ex-pansa*). Fleishy herb of the natural



New Zealand Spinach. Branches with foliage and flowers

order Ficoideae. It is widely distributed in the S. hemisphere. It is more or less prostrate, with alternate, oval, fleshy leaves, and inconspicuous, imperfect yellow flowers. It is frequently grown in Europe as a substitute for real spinach (*Spinacia oleracea*).

Next Friend. In English law, adult person who lends his name to a legal proceeding brought by or on behalf of an infant or lunatic. The action is entitled "A. B. (an infant) by C. D. his next friend." The next friend need not be any relation of the infant; and before his name can be used, he must sign a consent for that purpose. If the infant plaintiff loses with costs, the next friend is liable to the defendant for these costs, though as a rule these are allowed him out of the infant's estate. See *Insanity*.

Ney, MICHEL (1769-1815). French soldier. Born Jan. 10, 1769, at Saarlouis, he was the son of a cooper. Joining the army in the ranks in 1788, he rose rapidly during the Revolutionary wars, and by 1796 had become a brigadier-general. The capture of Mannheim in 1799 added to his reputation, and in 1804 he was created a marshal, having in the meantime fought at Hohenlinden, and other battles against the Austrians, and also conducted a diplomatic mission

to Switzerland. His storming of the entrenchments at Elchingen, in 1805, brought him his dukedom, and later he distinguished himself at Jena, Eylau, and Friedland.

Sent to Spain in 1808, Ney returned from the Peninsula in 1812, having quarrelled with Masséna, under whom he had been called upon to serve in the invasion of Portugal. His victory at Borodino in the Russian campaign in 1812 brought him the title of prince of Moskova, and to him is due the credit of saving the remnants of the French army in the retreat. In 1813 he fought at Lützen, Bautzen, and Leipzig, but he made his peace with the Bourbon régime in 1814. When Napoleon returned from Elba, Ney was sent to oppose him, but he deserted with his army to his old master, and commanded the centre at Waterloo. Brought to trial for his desertion, he was sentenced to death, and shot in Paris, Dec. 7, 1815.

Ngami. Lake in the N.W. of the Bechuanaland Protectorate. It was discovered by Livingstone in 1849. During recent years it seems to have been drying up, and the Okovango river which formerly discharged into it no longer does so. It has been proposed to divert rivers into the lake in order to make it a reservoir for irrigation.

Niagara. Town and watering-place of Ontario, Canada. It stands on the Canadian side of the Niagara river, where it falls into Lake Ontario. It is 15 m. below the Falls, and is sometimes called Niagara-on-the-Lake. Known as Newark, it was burned down by the American troops, Dec. 10, 1813, and was the first capital of Upper Canada, now Ontario. Pop. 1,400.

On the opposite (U.S.A.) side of the river is Fort Niagara. Owing to its strategic importance, a fort was built here in 1675, and another one in 1725-27, earlier ones having been destroyed. Then French, it was taken by the British under Sir W. Johnson in 1759. It was an important point during the War of Independence, as it was in the war of 1812-14, by which time it had become the property of the U.S.A. On Dec. 29, 1813, a British force took it, but it was restored to the U.S.A. in 1814. The magazine and other old buildings remain.

Niagara Falls. Famous falls on the lower portion of the Niagara river, N. America. The river, which is 33 m. long, separates in part the prov. of Ontario, Canada, from the state of New York, U.S.A., and flows from Lake Erie to Lake Ontario. During its course it makes a total descent of 326 ft., about 50 ft. being in the rapids above the Falls



Ney

and 111 ft. in those below them. The river is interspersed with islands, one, Grand Island, being about 27 sq. m. in area. About 4 m. lower down the river is precipitated over a great limestone ledge.

The cataract is divided into two by Goat Island, the American Falls, on the N. side, being 1,080 ft. wide and 167 ft. high, and the Horse-shoe or Canadian Falls, on the south side, 3,100 ft. across and 158 ft. high. The depth of water at the crest of the former is 10 ft., and of the latter 20 ft. The volume of water sweeping over both cataracts is computed at 100,000,000 cubic ft. per hour. Below the descent the river plunges through a deep and narrow chasm to Lewiston, 7 m. distant. The walls of this ravine lie from 200 to 400 yds. apart, and rise sheer to a height of from 80 to 100 yds. About 2 m. below the Falls is the whirlpool.

The river is crossed by three bridges below the Falls, a suspension bridge for pedestrians and carriages a little distance below the cataract, and two railway bridges about 2 m. farther down. Since 1890 the water power has been utilised for the generation of electricity, the water being drawn off through tunnels above the Falls and returned in a similar manner into the chasm below. The shores along both sides of the Falls have been made government reservations, the Queen Victoria Niagara Falls Park (1888) covering 154 acres, and the New York State Park (1885) 115 acres. See Blondin.

Niagara Falls. City and port of entry of Ontario, Canada. It stands on the W. side of Niagara river, here crossed by three bridges, about 2 m. below the Falls, being 82 m. from Toronto. On the opposite side of the river is the U.S. city of Niagara Falls. It is served by the C.P.R., G.T.R., Michigan Central, New York Central and other rlys., while an electric rly. also connects it with Toronto. It is thus an important rly. centre, and its enormous water power generates electric power, which is employed for the factories here and for those of Toronto and other cities. A park, commemorating Queen Victoria, occupies a length of 2 m. along the river. The original name of the city was Clifton. It then became Drummondville, but was known as Niagara Falls when made a city in 1903. Pop. 11,000.

Niagara Falls. City and port of entry of New York, U.S.A., in Niagara co. It stands on the Niagara river, 23 m. by rly. N.N.W. of Buffalo, and is served by the New York Central and Hudson



Niagara Falls. Plan showing the position of the Falls and the adjacent Canadian and American shores

River and other rlys. It is the seat of Niagara University and of De Veaux College. Electrical power is supplied by the Falls for flour mills, machine shops, foundries, planing mills, paper mills, and electrochemical works. Niagara Falls received a city charter in 1892. Pop. 50,800.

Niagara Series. In geology, a subdivision of the Silurian system of rocks. The rocks of the system are found in the U.S.A. and Canada, and contain red haematite iron ore, which is the basis of many of the great steel industries of N. America. See Silurian.

Niam-Niam (Great eaters). Dinka name for a negroid people on the watershed between the tributaries of the Bahr el-Ghazal and the Welle basin, in Central Africa. They call themselves Zandé. Agile, round-headed, thick-lipped, chocolate-hued, they exhibit aboriginal Nuba elements with Fula admixture. They are warriors and skilful iron-workers. See Negro.

Nias. Dutch island of the Malay Archipelago, off the W. coast of Sumatra. Its soil is extremely fertile, its inhabitants Malays akin to the Battas. Rice is the main product. Area, 1,800 sq. m. Pop. 170,000.

Nibelungenlied (Ger., song of the Nibelungs). Medieval German epic. The unknown Austrian author composed the poem about 1200 or somewhat earlier. The

stanza consists of three lines with six accents and one with seven.

The poem, in 38 adventures, consists of two parts. The first part relates the story of Siegfried, his marriage to Kriemhild, her jealousy of Brunhild, and the murder of Siegfried by Hagen, the Nibelung; and the second part tells how Kriemhild, who had married Etzel or Attila, king of the Huns, avenged herself on the Nibelungs, and was herself slain. The name Nibelungs, originally a perhaps mythical people, whose hoard Siegfried had won, is, in the Nibelungenlied, transferred to the Burgundian house ruling at Worms, who acquire the hoard through the murder of Siegfried. Their king, Günther, brother of Kriemhild and husband of Brunhild, is the historic Gundahari, who was slain when the Burgundian kingdom of Worms was destroyed in 437.

The Icelandic Völsunga Saga and other versions preserve more primitive forms of the Siegfried legend than the Nibelungenlied, which eliminates many crude and mythological elements, and deepens the tragic motives. Its courtly and chivalric setting only slightly obscures the manners and ideas of an earlier pagan age. Of the many renderings of the Nibelungenlied into modern German, that of Simrock may be mentioned, and of English translations those by A. G. Foster-Barham, 1887, A. Horton, 1898, and in prose by M. Armour, 1897. See Brunhild; Kriemhild; Siegfried. Pron. Neebelooongenleed.

Niblick. One of a golfer's iron clubs. Shorter, heavier, and more lofted than the mashie, it is the chief club for use in sand bunkers, and in awkward lies in grass, gorse, or heather. Strongly wielded, a niblick will propel the ball a considerable distance with a lofty flight. Firmly held, it will pitch a neat little chip from the rough near the green with sufficient back spin to make the ball stop almost immediately it drops on the green. Sufficiently short to be swung in diverse ways, it lends itself to a great variety of shots. See Golf.

Nicaea (mod. Iznik). Ancient city of Bithynia, Asia Minor. The name was given by Lysimachus in honour of his wife to a city founded by Antigonus. The kings of Bithynia made it one of their two residences. It is celebrated as the scene of the general Church council of 325. Nicaea long remained an important city; it was the capital of the Seljuk sultan Soliman in 1078, and the seat of an Eastern empire after the conquest of Constantinople by the Latins in 1204.

Nicaea, COUNCIL OF. General council of the Church. It met June 19, 325, being convened by Constantine to settle the Arian controversy, determine the correct date for the observance of Easter, and consider other questions. Arius attended to defend his teaching, while the orthodox party was championed by Athanasius. The council formulated the nucleus of the Nicene Creed. The teaching of Arius was condemned, and 14 of his 17 supporters submitted. The date of Easter was fixed for the next Sunday after the first full moon following March 21. Arius was banished to Illyria by Constantine, and his adherents were exiled. See Arianism; Athanasius.

Nicaragua. Central American republic. It lies between the Pacific Ocean and the Caribbean



Nicaragua arms

Sea and between Costa Rica on the S. and Salvador and Honduras on the N. The E. coast, of which the N. section is known as the Mosquito Coast, is backed by an alluvial plain, beyond which lie the central mts., which rise to 7,000 ft. From the Gulf of Fonseca on the N.W. coast a depression extends S.E. across the state, comprising the basins of Lakes Managua and Nicaragua and the valley of the San Juan river. This is a volcanic area, Ometepe being an active volcano; Coseguina erupted in 1835. Between the lakes and the Pacific Coast is a range of low mts., the chief centre of volcanic activity in the country. The E. is peopled by Indians and negroes from the West Indies, the W. by Spaniards, Indians, and people of mixed Spanish and Indian origin. The E. produces bananas, coconuts, and pineapples, the W. coffee, sugar-cane, cocoa. The E. imports its food from U.S.A., the W. produces its own and in addition is able to export a surplus to neighbouring republics.

Extensive forests yield mahogany, cedar, gums, and medicinal plants. Over a million cattle provide hides for export. Gold and silver are mined; copper, tin, and zinc are known to occur. Managua is the capital; the W. ports Corinto and San Juan del Sur do more than two-thirds of the trade; the E. ports Bluefields, Pearl Lagoon, and Greytown are mainly interested in the fruit trade with U.S.A. The rly. runs inland from the seaport of Corinto.

Gil Gonzalez reached the Pacific Coast in 1522. Since it became a republic, freed from Spanish autho-

rity, Nicaragua has had a troubled history. The present constitution dates only from 1912. Area, 49,200 sq. m. Pop. 750,000. See Central America; N.V.; consult also The Key to the Pacific, A. R. Colquhoun, 1895; Central America, F. Palmer, 1910.

Nicaragua. Lake of Central America. It lies in the S.W. of Nicaragua, its S. end bordering on Costa Rica, and is separated from the Pacific by a narrow isthmus. Oval in outline, it measures 110 m. by 45 m., and has an area of about 2,990 sq. m. The depth varies between 15 ft. and 250 ft. It receives the surplus waters of Lake Managua at its N. end, and discharges its own through the San Juan into the Caribbean Sea.

Surveys have proved that it was once continuous with Lake Managua and discharged into the Pacific. It contains numerous islands, the largest of which are Zapatera, which rises to over 2,000 ft., Ometepe, which is inhabited by Indians engaged in the raising of cattle and cultivation of maize, and Madera, which is connected with Ometepe by a strip of land covered at high water. There are also groups of volcanic islets. Sculptured stones, massive idols, and other antiquities have been discovered on its shores. Water fowl and alligators abound. Granada (q.v.) at the N.W. corner is the principal town on the lake.

Nicaragua Canal. Proposed ship canal between the Caribbean Sea and the Pacific Ocean. The

In the succeeding 20 years difficulties with Great Britain concerning the territory round the mouth of the San Juan river, and political disturbances in Central America, prevented progress, although in 1878 three American commissioners declared for the Nicaragua Canal. In 1879 an international congress at Paris decided on the Panamá route.

Between 1895-1901 two American commissions examined the proposed route and reported favourably; the second commission, however, issued a supplementary report in 1902 recommending the U.S.A. to accept the offer of the reorganized Panamá Canal Co. to sell its property for \$8,000,000. The Panamá Canal was subsequently built, but the U.S.A. purchased for \$600,000 the canal route, Corn Island on the Caribbean coast, and a naval base in the Gulf of Fonseca. See Central America; Panamá Canal; Ship Canal.

Nicarao or **NIQUIRAN**. American Indian tribe of advanced culture in Central America at the time of the Spanish conquest. Of Aztec speech, they established tribal communities between Lake Nicaragua and the Pacific coast, as well as on the lake islands. Remoter offshoots reached the Nicoya peninsula and the W. end of the Chiriqui lagoon. They introduced human sacrifices and certain forms of Mexican culture into Nicaragua and are reputed to have kept registers of property.

Nice. City and pleasure resort of the Riviera, France. It stands on



Nicaragua Canal. Map showing the course of the proposed canal between the Caribbean Sea and the Pacific Ocean

great natural depression of Nicaragua occupied by the lakes of Nicaragua and Managua and the valley of the San Juan river suggested the facility with which a ship canal could be constructed. The acquisition of California and a Pacific coast-line by the U.S.A. made the question of a trans-isthmian canal a matter of moment to America, and in 1849 an American company obtained a concession, which lapsed in 1856, from the Nicaraguan government.

the Baie des Anges, an opening of the Mediterranean, at the mouth of the Paillon and in the dept. of Alpes Maritimes. It is 740 m. by rly. from Paris, 100 m. from Marseilles, and is noted for the wonderful climate and beautiful surroundings.

Nice consists of an old town with narrow streets on the left of the Paillon, and modern suburbs on the right. It has fine squares, boulevards, and bridges across the river. In addition to its cathedral, and many other churches, there are the prefecture, once the royal palace, palais de justice, a municipal casino, and museums. In normal



Nice arms



Nice, France. View from the air of the Promenade des Anglais, the fashionable seaside promenade, looking toward the Jardin Public, beyond which is the casino

times the chief occupation is catering for holiday visitors. The annual carnival is held in April; other features of the season are the races, the regattas, and the aviation meeting. Nice has a harbour, some shipping, and steamer connexion with various Mediterranean ports.

Nice, the Greek Nicaea, was founded about 350 B.C. by Phocaeans from Marseilles, though earlier there had been a Phoenician settlement there. It became in the Middle Ages connected politically with Italy, and was ruled by one or other of that country's princes. Several times in the 17th and 18th centuries it was taken by the French, until in 1793 it became for a few years part of France. From 1814-60 under the king of Sardinia, it was ceded to France in 1860. Pop. 143,000. *See* Corniche. *Pron.* Neece.

Nicephorus. East Roman emperor, 1078-81. General of the army of the East under Michael VII, on the latter's resignation he was proclaimed emperor by the troops at Nicaea and crowned in Constantinople, April 3, 1078. During his reign the Seljuk Turks gained possession of Asia Minor except the coasts, and lower Italy fell into the hands of the Normans. His general, Alexius Comnenus (*q.v.*), who had hitherto loyally supported him, raised the standard of revolt, and Nicephorus abdicated and retired to a convent, Alexius being crowned in S. Sophia, April 2, 1081. Nicephorus was the last emperor of the Armenian or Macedonian dynasty, which had lasted from 867. *See* Byzantine Empire. *Pron.* Niseeforus.

Nicholas. Masculine Christian name. Of Greek origin, it means victory of the people. It is specially popular in Russia and other countries where the Greek Church is strong.

Nicholas or **NICOLAS** (d. c. 342). Bishop and saint. A native of Patara, in Lycia, Asia Minor, he became archbishop of Myra, and opposed the Arians at the Council of Nicaea. Buried in his cathedral at Myra, his supposed remains were reinterred in 1087 in the church of San Nicòla, Bari, Italy, where they are visited annually by thousands of pilgrims. He is the patron saint of Russia and of seafarers, travellers, merchants, children, and those overtaken by sudden danger. The popular name Santa Claus is a corruption of S. Nicholas. His festival is kept on Dec. 6; that of his translation on May 9. In addition to the cathedral at Newcastle and a chapel in York Minster, more than 370 English churches are dedicated to him, and he is the subject of notable works by Titian, Lorenzo Lotto, Raphael, and other artists, and of innumerable legends.

Nicholas. Name of five popes. Nicholas I, pope from 858-67, largely developed the papal power, excommunicating Photius, the intruded patriarch of Constantinople, and various Frankish archbishops who disputed the papal supremacy. Nicholas II, pope from 1058-61, was the nominee of Hildebrand. The anti-pope Benedict X was deposed in his favour, and his chief work was to free the papal elections from the Roman factions and the control of the emperor. His name was Gerhard of Burgundy. Nicholas III belonged to the Roman

Orsini family and was pope from 1277-80. His policy was to strengthen the papacy by checking the imperial influence in Italy. He made the Vatican the official papal residence. Nicholas IV, pope from 1288-92, was of humble family and the first Franciscan pope.

Nicholas V (1397-1455). Pope from 1447-55. By name Tommaso Parentucelli, and a native of Liguria, he was educated at Bologna, and became its bishop in 1443. He was created cardinal in 1446, and elected pope the following year.



Nicholas V, Pope 1447-55

His pontificate was notable for the architectural improvements carried out in Rome. These included not only the building of churches, the paving of the streets, and the provision of an adequate water supply by means of the ancient aqueducts on which Rome had once depended, but the rebuilding of the Vatican and the basilica of S. Peter, and the foundation of the Vatican Library, which Nicholas also enriched with treasures drawn from all lands. He died at Rome, March 24-25, 1455.

Nicholas I (1796-1855). Tsar of Russia. Born at St. Petersburg, July 6, 1796, third son of Paul I and Maria Feodorovna of Württemberg, he received a careful education under his mother's supervision, and in 1814-15 visited several European countries.

On his return to Russia, July 13, 1817, he married Charlotte, eldest daughter of Frederick William III of Prussia. His elder brother Constantine renouncing his claim to the throne, Nicholas succeeded Alexander I, Dec. 1, 1825, and was formally crowned at Moscow, Sept. 3, 1826.

His accession was the occasion of a mutiny among Constantine's adherents in the army, in dealing with which he displayed great personal courage and firmness. His foreign policy was directed towards the East, and particularly the conquest of Turkey. The war with Persia, concluded Feb. 28, 1828, much increased Russia's foreign territory. Nicholas died March 2, 1855, six months before the fall of Sevastopol. *See* The Romanoffs, H. S. Edwards, 1890.



Nicholas I, Tsar of Russia

Nicholas II (1868-1918). Tsar of Russia. He was born May 18, 1868, the eldest son of Alexander III and the Danish princess, Dagmar (Maria Feodorovna). After an education in modern languages and science under General Danielovitch, he became,



Nicholas II,
Tsar of Russia

1889, a lieutenant in a guards regiment. Succeeding to the tsardom Nov. 1, 1894, he on Nov. 26 married Princess Alix of Hesse, who embraced the Orthodox Church and took the name of Alexandra Feodorovna. Nicholas was crowned at Moscow, May, 1896.

When the revolution broke out in Russia, early in 1917, Nicholas was forced to abdicate, March 15, 1917. He then retired to his estate in the Crimea, but was later arrested and imprisoned at Tsarskoye, at Tobolsk, and finally at Ekaterinburg in the Urals, where, after some months of acute privation and distress, he was ruthlessly assassinated, with the tsaritsa, the tsarevitch, and other members of the imperial family, July 16, 1918, by the Bolshevik commissary Yurovsky. *See* Ekaterinburg; Russia; consult also *The Last of the Romanoffs*, C. Rivett, 1918; *The Last Days of the Romanoffs*, R. Wilton, 1920.

Nicholas (1841-1921). King of Montenegro. Born Sept. 25, 1841, he was the son of Mirko Petrovich, and the nephew of Danilo, prince of Montenegro, then part of the Turkish empire. Educated mainly in Paris, in Aug., 1860, he succeeded the murdered



Nicholas, King of
Montenegro

Danilo as prince, and he was still reigning when the Great War broke out in 1914. The independence of his country was recognized in 1878, and in 1910 he took the title of king. In 1916, having joined the Great War on the side of Serbia, he was driven out and took refuge in France. He resigned his rights to Montenegro, and died at Antibes, March 1, 1921. *See* Montenegro.

Nicholas (b. 1856). Russian grand duke and soldier. The son of the grand duke Nicholas, and second cousin of Tsar Nicholas II he was born at St. Petersburg, Nov. 6, 1856. Educated at the Nikolaieffsky Academy, he entered the army as

an officer of cavalry. On the outbreak of the Great War Nicholas II made him commander-in-chief of the Russian armies, and it was under him that the operations against the Austro-Germans were conducted until Sept., 1915. The grand duke was made viceroy of Caucasasia, and then appointed to the command in the Caucasus. His campaign resulted in the conquest of Turkish Armenia. During the Russian Revolution he was deprived of his command, and sent to Yalta, in the Crimea, on March 28, 1917, where he was virtually a prisoner, but in April, 1919, was able to go to Italy.

Nicholas Nickleby. Charles Dickens's second novel, published in monthly parts, April, 1838-Oct., 1839, with illustrations by Phiz. Designed to expose the "monstrous neglect" of education and the crying evils of the cheap boarding-schools for boys in England, the book contains some of Dickens's best known creations—Wackford Squeers, master of Dotheboys Hall; Smike, the ill-treated drudge; the Cheeryble Brothers, benefactors of Nicholas; Vincent Crummles, the itinerant theatrical manager, and his family; and Mr. and Mrs. Mantalini. The novel was dramatised by E. Stirling, 1838, and A. Halliday, 1875. *See* Mantalini.

Nichols, JOHN BOWYER (1779-1863). British printer and antiquary. Son of John Nichols the printer (1745-1826), he was born in London, July 15, 1779, and educated at St. Paul's School, in 1796 entering his father's business. Long associated with *The*



Gentleman's Magazine, he was proprietor, 1834-56. He was one of the

printers to Parliament, and in 1850 was master of the Stationers' Company. His chief work was the publication of county histories. Fellow of the Linnean Society, 1812, and of the Society of Antiquaries, 1818, he died at Ealing, Oct. 19, 1863.

Nicholson, JOHN (1821-57). British soldier and administrator. Born in Ireland, Dec. 11, 1821, he was the son of a medical man, and was educated at Dungannon. He entered the service of the E. India Co. in 1839, and in 1841 was taken prisoner by the Afghans, but he soon escaped, and in 1845-46 he served against the Sikhs, as he did when the war broke out again in 1848. Appointed a deputy commissioner in the Punjab after its annexation, Nicholson proved himself an administrator of extraordinary gifts, exerting such a marked influence over the natives that he was worshipped by a brotherhood of fakirs.



John Nicholson,
British soldier



Nicholas Nickleby stops Squeers's bullying and gives the brutal schoolmaster a taste of his own cane. From the drawing by Fred Barnard

When the mutiny broke out in 1857, he checked the movement in his own district, and then took command of a movable column and advanced to Delhi. Marching at a tremendous pace, he destroyed on the way a body of rebels near Gurdaspur, and then reached the besieged city. On Sept. 14, when leading the storming party, he was mortally wounded, and he died Sept. 23, 1857. In the Punjab his fearlessness and justice were a constant source of wonder, and the impression he made on his contemporaries was summed up by Lord Roberts, who said that Nicholson impressed him more powerfully than any man he had ever met. *See* Indian Mutiny; consult also *Life*, L. J. Trotter, 1904.

Nicholson, JOSEPH SHIELD (b. 1850). British economist. Born at Wrawby, Lincs., Nov. 9, 1850, he



J. S. Nicholson,
British economist
Russell

was educated at Edinburgh University, Trinity College, Cambridge, and Heidelberg. After being a tutor at Cambridge, he was elected professor of political economy at Edinburgh

in 1880, and made himself one of the foremost exponents of the orthodox political economy. His books include *Principles of Political Economy*, 1893-1901; *Elements of Political Economy*, 1903; *War Finance*, 1919; and *The Revival of Marxism*, 1920. He published also several romances, including *A Dreamer of Dreams*, 1889.

Nicholson, SYDNEY HUGO (b. 1875). British organist. Born Feb. 9, 1875, a son of Sir Charles Nicholson, Bart., he was educated at Rugby and New College, Oxford. Having taken a musical degree, he became, in 1898, organist of the parish church at Barnett. After experience at Eton, he was appointed, in 1908, organist of Manchester Cathedral, and in 1918 he succeeded Bridge at Westminster Abbey. His works include *British Songs for British Boys*, cantatas, etc.



S. H. Nicholson,
British organist

Nicholson, WILLIAM (b. 1872). British painter. Born and educated at Newark-on-Trent, he derives his art from Whistler and the Glasgow school. In early life he was much associated with W. E. Henley, whose portrait he painted. Both in etching and in colour work, he established a reputation for originality and daring. His works include *La Belle Chausseuse* and other notable portraits.

Nicias (d. 413 B.C.). Athenian statesman and general during the Peloponnesian War. In opposition to the democratic party, he strongly advocated bringing the war to an end while favourable peace terms could be obtained, and took a leading part in negotiating the short-lived peace of 421 B.C. Having already achieved several military successes, he was chosen chief commander of the expedition to Sicily in 415 B.C., though personally opposed to it. At first he met with some success, but the arrival

of the Spartan Gylippus changed the situation, and though reinforced by Demosthenes, Nicias was defeated both by sea and by land. The Athenian force was obliged to surrender, and Nicias and Demosthenes were put to death. See *Peloponnesian War*; *Syracuse*.

Nickel. Elementary metal. Its chemical symbol is Ni; atomic weight, 58.6; specific gravity, 8.35 cast, 8.80 to 8.96 rolled; melting point variously given from 1,450° C. (2,642° F.) to 1,660° C. (2,912° F.). In colour it is white with a slightly yellowish tinge, and easily takes a brilliant polish. It is one of the hardest and least fusible of metals, ductile, malleable, and tenacious.

In tensile strength nickel surpasses iron; specimens carrying a minute proportion of magnesium have shown a tensile strength of over 38 tons to the sq. in. It may be hammered, rolled, and drawn; sheets have been made of it less than 1/1000th of an inch in thickness. It is slightly magnetic, is resistant to ordinary atmospheric influences, and little affected by hydrochloric or sulphuric acids in the cold, though readily attacked by dilute nitric acid and by aqua regia. It is weldable at a white heat, and may be readily welded to iron and certain alloys.

Ores of Nickel

Until recent years the most important ores of the metal were kupfarnickel or arsenical nickel, carrying, when pure, about 44 p.c. nickel with 56 p.c. arsenic, occurring in Germany, Austria, France, and to a small extent in Cornwall and in Scotland; chloanthite or white nickel ore, having about 28 p.c. nickel and 70 p.c. arsenic with small proportions of cobalt or iron at times, while in other cases cobalt is associated in the mineral which approaches to smaltine; nickel glance or gersdorffite, or nickel arsenical glance, carrying 28 to 30 p.c. nickel with arsenic and sulphur, found in the Harz Mts., Sweden, etc.; breithauptite or nickel antimonide, carrying 25 to 30 p.c. nickel, found in Nassau, Germany; and nickel pyrites, hair nickel, or millerite, occurring rarely in Bohemia, Saxony, and Cornwall, but in more important quantities in Pennsylvania, Arkansas, U.S.A., and Sudbury in Canada. Other minerals of nickel are ullmanite, annabergite, iron and nickel pyrites; while certain ores of other metals, particularly copper and cobalt, contain appreciable quantities of nickel. In 1863 an important ore of nickel, a nickel and magnesium silicate, was discovered by Francis Garnier in New Caledonia and was named garnierite.

For many years garnierite was the most important source of the metal, and is still the second, but more recent discoveries at Sudbury, in Ontario, Canada, have resulted in the latter district becoming by far the largest producer of nickel. Another district of Ontario, Cobalt, about 150 m. N. of Sudbury, also produces a considerable quantity of nickel.

Methods of Extraction

Nickel was formerly extracted from its ores by first concentrating the metal, where arsenic was present, in a speiss, i.e. the compound of arsenic and nickel which is formed when an arsenical ore is partly smelted; or, where arsenic was not present, in some other intermediate product of a smelting process as in copper matte or blister copper, in the case of copper ores; and then obtaining the nickel either by chemical solution followed by precipitation, or by smelting the speiss or matte with carbon in a reverberatory furnace or in crucibles.

The Sudbury ore is chiefly a compound of sulphur, iron, nickel, and copper in a matrix of gneiss, and is technically described as a nickeliferous pyrrhotine. Two processes, the Orford and the Mond, are in extensive use for the extraction of the nickel. In both the ore is first roasted to remove sulphur down to not more than 7 p.c., after which it is, in one system, smelted with flux and coke in a water-jacketed blast-furnace, yielding a matte containing the concentrated metals and a slag which is thrown away. The matte is treated in a basic converter by which most of the remaining sulphur is removed together with iron, and the nickel and copper oxidised, the final product containing from 50 to 55 p.c. nickel and 25 to 28 p.c. copper. In the process invented by Mond the matte, as received from Canada, is treated with water gas at a moderately high temperature by which the nickel itself is converted into a gas, nickel carbonyl, which upon treatment in a separate vessel by gas again at a still higher temperature is decomposed, and the nickel thrown down in the metallic state.

An electrolytic process for the extraction of the nickel from the ore, known as the Hybinette process, has also been used.

The first important industrial use to which nickel was put was the plating of other metals, and this is still one of the purposes to which it is largely applied. German silver (q.v.), argentan, or nickel silver, is an important alloy of this metal. Alloys of copper and nickel

are largely used for coins. The "nickel" coins of the U.S.A. and of Belgium contain 75 p.c. copper and 25 p.c. nickel; while the analogous coins of Germany, Sweden, Denmark, Italy, Switzerland, and South America contain also appreciable proportions of tin, or zinc, or of both. Nichrome is an alloy of nickel and chromium having a very high melting-point, and is used for the preparation of wire for electrical purposes; platinum is an alloy containing from 1 to 2 p.c. of tungsten; aphtit is an alloy chiefly of iron and nickel.

The most important use of nickel is in the preparation of nickel steel. This use appears to have been due to Henry Schneider of the Creusot Iron Works, in France, who took out patents for the preparation of iron and nickel alloys containing about 63 p.c. of the former and 30 p.c. nickel with some carbon. Many steels are now made which owe their special properties to nickel, both tool steel and structural steel. The proportion of nickel contained in these steels ranges from 2 p.c. to 5 p.c., the carbon from 0.2 to 0.5 p.c. The great new railway bridge across the St. Lawrence at Quebec has been built of nickel steel. *See* Alloys; Metallurgy; consult also The Nickel Industry, A. P. Coleman, 1913; Handbook of Metallurgy, H. Louis and C. Schnabel, new ed. 1921.

Nicker Nut (*Caesalpinia bonduc* and *C. bonducella*). Seed of evergreen shrubs of the natural order Leguminosae. Natives of tropical sea shores, they are trailing plants with the leaves twice divided into small leaflets. The rusty yellow flowers form sprays, and are followed by prickly pods containing one to three large hard and polished seeds, which are very bitter-tasting. In native Indian medical practice they are used as a tonic and fever cure, while the oil compressed from them is used in palsy. They are also strung together as necklaces and rosaries.

Nicobar Islands. British islands in the Bay of Bengal. Of the 19 islands 12 are inhabited. They lie S. of the Andaman Is., to which they are joined administratively, and from which they are 75 m. distant across Ten Degree Channel. Nancowry Harbour is a spacious anchorage between Nancowry and Camorta. The natives produce copra. The group was ceded to Britain by the Dutch in 1869. Area, 635 sq. m. Pop. 8,800.

Nicol, ERSKINE (1825-1904). British painter. Born at Leith, July 3, 1825, he studied under Sir



Erskine Nicol,
British painter

William Allan and Thomas Duncan at the Trustees' Academy. Elected A.R.S.A. and R.S.A., he removed to London in 1863, and became A.R.A. in 1866.

As a painter

of humorous, especially Irish physiognomy, he enjoyed a great vogue. He died March 8, 1904.

Nicolaitans. Heretical sect which arose in the second century in the Christian Church. Their doctrines are associated with that of Balaam (Rev. ii. 14; Jude; 2 Pet. 1). Regarding as obsolete the injunctions of Deut. xxiii, 17-18, and perhaps affected by the pagan rites connected with the worship of Dionysus and Aphrodite, they seem to have adopted a form of fanatical libertinism which attached to itself other heresies. The alleged leadership of the sect by Nicholas the deacon and proselyte of Antioch is unproven.

Nicoll, SIR WILLIAM ROBERTSON (1851-1923). British journalist and theologian. Born at Lumsden,

Aberdeenshire, Oct. 10, 1851, and educated at Aberdeen University, he was Free Church minister of Dufftown, 1874-77, and of Kelso, 1877-85. While at Kelso

he was literary adviser to an Edinburgh publisher, and in 1884 was appointed editor of The Expositor. Having resigned his ministry at Kelso owing to ill-health, he settled in London in 1886. He founded The British Weekly, 1886; The Bookman, 1891; The Woman at Home (in cooperation with Annie S. Swan), 1893, and other periodicals, and acted as literary adviser to Hodder & Stoughton (q.v.). Under his editorship The British Weekly became a journal of national influence. His weekly article, The Correspondence of Claudius Clear, so long sustained with astonishing freshness, was a popular feature.

Unrivalled as a critic of modern literature, he was not only a leader in the literary life of his time, but took a prominent part in social reform and politics. He received the degree of LL.D. from Aberdeen in 1890, was knighted in 1903, and made a companion of honour in 1921. He wrote extensively on

literature and theology, his works including Life of James Macdonell, 1890; The Return to the Cross, 1897; Letters on Life, 1901; My Father, 1908; Life of Ian MacLaren, 1908; and A Bookman's Letters, 1913. He edited The Expositor's Greek Testament and the Works of Charlotte Brontë. He died May 4, 1923. *See* British Weekly; consult Life, J. T. Stoddart, 1903.

Nicol Prism. Name given to a prism consisting of Iceland spar and used as a means of obtaining plane polarised light. If a ray of light falls on one of the faces of a rhombohedron of Iceland spar, part of the light passes straight through, and part of it is refracted and travels and emerges along another line, i.e. there are two refracted rays for one incident ray.

In a Nicol prism one of the two rays is eliminated by internal reflection within the crystal, the prism being cut in two by a plane which is perpendicular to the principal plane of one face. The two surfaces are then polished and cemented together in their original position by means of a thin transparent film of Canada balsam. This substance has refractive properties of a kind which so bend the rays coming to it through the face of the Iceland spar that one of the rays is totally reflected within the prism, and the other emerges as plane polarised light. A Nicol prism may be used for producing polarised light, and for determining by analysis whether light is polarised or not, and the plane in which polarisation has taken place. It is named after William Nicol, of Edinburgh. *See* Polarisation of Light.

Nicomedia. Ancient city of Bithynia, Asia Minor, the modern Ismid. It stands at the N.E. end of the sea of Marmora, and was founded 264 B.C. by Nicomedes I of Bithynia. After the quadripartite division of the Roman empire by the emperor Diocletian, it became the seat of the government of Diocletian himself. Hannibal committed suicide by poison in Nicomedia, and it was the birthplace of the historian Arrian.

Nicosia or LEFKOSIA. Capital of Cyprus. It stands in the centre of the island, 25 m. N.W. of the seaport Larnaca. It retains its high Venetian walls, and contains a fine Gothic edifice, once the cathedral of S. Sophia and now a mosque, and English and other churches. It is the see of a Greek archbishop and the seat of the British governor. Silk, leather, and woollen goods are manufactured. From the time of Constantine the Great until 1567 it was 9 m. in



Sir W. R. Nicoll,
British journalist

Oppos

circumference, but the Venetians reduced it to 3 m. and fortified it, demolishing temples, palaces, and beautiful monuments. In 1570 it was besieged and taken by the Turks. Pop. 16,000. See Cyprus.

Nicosia. City of Sicily, in the prov. of Catania. Built among the heights of Monte San Giovanni, at an alt. of 2,840 ft., 42 m. W.N.W. of Catania and 21 m. by road from the rly. station for Leonforte, it has a fine Norman cathedral and other churches. Sulphur springs are in the vicinity, and salt is mined. The inhabitants speak a Lombard dialect. Destroyed by the Saracens, it was rebuilt by the Normans. Pop. 16,000.

Nicot, JEAN (1530-1600). French diplomat and philologist. Born at Nîmes, the son of a notary, he became a lawyer in Paris in 1554. Favoured by Henry II, he was ambassador to Lisbon in 1559, and there became acquainted with the properties of the



Jean Nicot,
French diplomatist

plant later known as tobacco, and called in his honour *nicotiana*, which he introduced to Catherine de' Medici. Recalled in 1561, he spent his later years in philological work. He died in Paris, May 5, 1600. See Nicotine.

Nicotera, GIOVANNI, BARON (1828-94). Italian statesman. Born Sept. 9, 1828, at Sambiasi,



Baron Nicotera,
Italian statesman

Calabria, he joined the Young Italy party and took part in the struggles of 1848-49. Arrested by the Neapolitan police in 1857 and sentenced to penal servitude for life, he was released on the conquest of the Sicilies by Garibaldi. He was minister of the interior, 1876-77 and 1891-92, and died June 13, 1894.

Nicotiana. Genus of herbaceous plants, of which the most important are the tobacco plants. See Nicot, Jean; Tobacco.

Nicotine. Liquid alkaloid occurring in the leaves of *Nicotiana tabacum*, the tobacco plant. Colourless, with a strong, stupefying, irritating odour, it is soluble in water, alcohol, and ether, and turns brown on exposure to the air. Tobacco contains from 2 to 8 p.c. of the liquid. Pure nicotine is one



Nicosia, Cyprus. Old Gothic cathedral of S. Sophia, now used as a Mahomedan mosque

of the most deadly poisons known, rapidly causing death by paralyzing the cardiac and respiratory centres in the brain. Nicotine, being destroyed by burning, is not present in the smoke of tobacco, the toxic action of which is due to carbon monoxide and other substances. Fatal poisoning by nicotine may, however, occur from its presence in a decoction made from tobacco. See Tobacco.

Nicoya, GULF OF. Inlet of the Pacific Ocean on the W. coast of Costa Rica, Central America. Protected W. by the peninsula of Nicoya, it penetrates inland about 50 m., its breadth varying between 20 m. and 30 m. The coasts are mountainous and picturesque. On the E. shore is Punta Arenas, the Pacific port of Costa Rica. The village of Nicoya is about 80 m. N.W. of San José.

Niotheroy. City of Brazil. The capital of the state of Rio de Janeiro, it is on the N. shore of the bay of Rio de Janeiro. In one of



Niederwald, Germany. Colossal statue of Germania, erected, 1877-83, in the Niederwald to commemorate the founding of the German empire

its suburbs is a popular sea-bathing station, Icaratry. Flannel, felt, soap, spirits, and tobacco are manufactured. Pop. 35,000.

Nictitating Membrane OR THIRD EYELID. Thin membrane at the side of the eye, which can be drawn rapidly across the cornea to clean the surface of the eye. It is best developed in

the birds, but may also be observed in the reptiles and in some batrachians. In mammals generally it is but slightly developed, and it is rudimentary in man. See Eye.

Nidd. River of Yorkshire (W.R.), England. It rises on Great Whernside, and flows E., S.E., and N.E. through Nidderdale, past Pateley Bridge, Ripley, and Knaresborough to the Ouse, 8 m. above York.

Niddry OR NIDDRIE. Village of Midlothian. It is 3 m. from Edinburgh, with a station on the N.B. Rly., and is a coal-mining centre. Another place of this name is a village in Linlithgowshire, known for its castle, now in ruins.

Niebuhr, BARTHOLOMÆUS GEORG (1776-1831). German historian. Born at Copenhagen, Aug. 27, 1776, and educated at Kiel, London, and Edinburgh, he entered the Danish state service in 1800, and the Prussian civil service in 1806. After his appointment as historiographer at Berlin University in 1810, a series of lectures which he delivered on Roman history revealed him as a highly philosophic and original historian. In 1816 he became Prussian ambassador to the pope, and while in Rome discovered valuable historical MSS. Resigning in 1823, he settled at Bonn, and died there Jan. 2, 1831. In his Roman history, 1811-32, Niebuhr was the pioneer of a new method; he broke with the view that had long held the field—that the traditional account was correct, and that all that was needed was an artistically composed narrative. See Life and Letters of N., Eng. trans. 1852. Pron. Neeboor.



B. G. Niebuhr,
German historian

Niederwald. Mt. ridge of Germany. It forms the W. end of the Taunus at the upper end of the

great gorge of the Rhine. Dominating the outlook from the river is the colossal statue, Germania, erected 1877-83 to commemorate the founding of the empire in 1871. S. is the Rheingau, famed for its mineral springs and vineyards.

Niello (Ital. from late Lat. *nigellum*, black enamel) Inlaying gold, silver, and bronze with a black metallic alloy of silver, copper, and lead, to which, when molten, there is added powdered sulphur. Since this alloy appears in the inlay as a deep black, silver has been the chief base on which the art has been practised, giving the greatest contrast between inlay and base.

The earliest extant example of the art is a 1st century bronze statue of a Roman general, in the British Museum. There are fine examples also in the church of the



Nierembergia. Flowers and foliage of *N. rivularis*

royal palace at Hanover, in S. Sophia, Constantinople, and in many churches in Italy and Russia; and the art has been popular in India for many centuries. It is said that niello first suggested the method of printing from engraved metal plates. Certainly prints are in existence in the British and other museums of a niello portrait of the Virgin made in 1452, and now in the Opera del Duomo, Florence. *Pron.* Ne-el-lo.

Niemen, **NYEMAN**, or **MEMEL**. River of Russia, Lithuania, and East Germany. It rises in the Russian govt. of Minsk, flows at first N.W. to Grodno, then N., and later W. past Kovno to enter the Kurisches Haff, an arm of the Baltic Sea. The river is navigable from Grodno, except for occasional obstructions in its bed; one of these, a mass of large stones called the Devil's Dam, is 15 m. above Kovno. With its affluents, of which the Viliya-Svyenta is the most useful, it serves Lithuania. Its length is 550 m. Area of basin, 35,000 sq. m. In the Great War, the Russians retreated to the Niemen after their defeat at Tannenberg

(q.v.), Aug., 1914, and in Feb., 1915, they were driven back to it after their advance. An area of 1,080 sq. m., N. of the lower course of the river, was administered by the Allied Powers pending the determination of the status of Lithuania. See Kovno; Memel; Vilna; Warsaw; N.V.

Niemes. Town of Bohemia, in Czecho-Slovakia. It is 27 m. by rly. from Liberec (Reichenberg), and manufactures textiles, timber goods, and chemicals.

Nieppe. Name of a forest and village of France, in the dept. of Nord. The former lies to the N. of the Lys Canal, and a few miles S. of Hazebrouck (q.v.). The forest, 6,171 acres in extent, was cleared of the Germans by British cavalry in Oct., 1914, and became of vital strategic value to the British northern army in covering the rly. junction of Hazebrouck. In April, 1918, the Germans reached its E. outskirts, but were held up by the 1st Australian division. The German withdrawal in Aug. freed it from further attack. The village is slightly N.W. of Armentières, and was the scene of critical fighting in April, 1918. See Ypres, Battles of.

Nierembergia. Genus of perennial herbs of the natural order Solanaceae, natives of S. America. The stems as a rule are more or less procumbent, or even prostrate. The tubular flowers vary from some pale tint of violet to blue or white. Several species are cultivated, of which *N. frutescens* is shrubby, with slender leaves and pale blue flowers. *N. calycina* is a downy plant with roundish leaves and white flowers, with yellow tube. *N. rivularis* has matted, creeping stems and oblong or spoon-shaped leaves; the flowers are white, tinged with yellow or rose.

Nierstein. Village of Germany, in Hesse-Darmstadt. It stands on the left bank of the Rhine, 9 m. S.E. of Mainz, trades in malt, maize, and dairy produce, and is noted for its Rhine wine. Near the village are sulphur springs and baths. Pop. 4,600.

Nietzsche, **FRIEDRICH** (1844-1900). German philosopher. Born at Röcken, in Prussian Saxony.



Friedrich Nietzsche, German philosopher

Oct. 15, 1844, son of a pastor of remote Polish extraction, he was educated at Naumburg grammar school, at the famous school of Pforta, and at Bonn and

Leipzig universities. After a year's compulsory service in the artillery, he returned in 1868 to Leipzig, obtained his degree, and at the age of 25 was appointed professor of classical philology at the university of Basel. Here he lectured with success until, in 1879, ill-health compelled him to resign. The university granted him a pension of £120 a year, and with this and small private resources he lived at various places, mostly in Italy and Switzerland, until an apoplectic fit in 1888 was followed by insanity. He died in his sister's house at Weimar on Aug. 25, 1900.

At an early age he became more attentive to the nature of the Greek genius than to the technicalities of Greek literature. He concluded, in *The Birth of Tragedy*, 1872, that the original genius of Greece, and the proper idea of mankind, was an instinctive and joyous creativeness—the Dionysiac element—which was later ruined by intellectualism and fixed moral rules—the Apollinist element. Hence his early zeal for Wagner and his fierce attacks upon contemporary Philistines.

Essentially a poet, Nietzsche never framed a philosophy, or systematically arranged his reflections on life, but his early ideal steadily developed. Against the prevailing intellectualism he passionately pleaded for strength, will, impulse. He knew little of science, and when Darwinism spread, he superficially acclaimed it as the gospel of eternal struggle, of the triumph of the strong. This misunderstanding of science is one of his fundamental errors.

He heatedly attacked pity and humanitarianism, and, on the ground that it had introduced these things into Europe, bitterly assailed Christianity. Few understood or appreciated his works, and he imagined a group of "free spirits," sharing his ideas, who might one day exist. These become, in his writings, the Beyond-Men or Supermen. The code of morals of these "master spirits" must differ from the prevailing "slave-morality," and his later works were almost entirely devoted to a "transvaluation of values," or a reconsideration of moral standards. Those are the main ideas of his chief works, *Human, All-Too Human*, 1876-80; *The Joyous Wisdom*, 1882; *Thus Spake Zarathustra*, 1883-84; *Beyond Good and Evil*, 1886; and *The Genealogy of Morals*, 1887.

A fierce apostle of the rights of the individual, Nietzsche scorned both democracy and bureaucracy. German nationalism of the type

taught by Treitschke, and German ideas (*Kultur*) generally, he repeatedly attacked. But by his lyrical praise of struggle, and ultimately of war, by his glorification of the individual will, by his scorn of humanitarianism and morality, he is partly responsible for the perversion of Germany. His Zarathustra, which contains his most dangerous excesses, attained an enormous circulation, and Young Germany followed him above all others. Few German writers of his generation evoked so extensive a literature, or had such fame abroad. The true followers of Nietzsche are cosmopolitan, and are intensely opposed to the German ideal of the state as superior to the individual.

Joseph McCabe

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Nieuport. French firm of aeroplane constructors founded by Édouard de Nieuport. By most careful attention to the reduction of resistance on every part of the machine, they built in 1910 a monoplane which surpassed everything then built for speed, and used only an engine of small h.p. Maintaining the tradition of this first machine, the Nieuport firm have continued among the world's most successful producers of high speed fighting machines. Nieuport fighter biplanes were largely used by both the British and the French air services during the Great War. A number of scouting machines known as Nieuport Nighthawks were constructed for the R.A.F. in 1919.

Nieuport (Flemish *Nieuwpoort*). Town of Belgium, in the prov. of W. Flanders. It lies on the Yser, 10 m. S.W. of Ostend, connected by rly. with Dixmude, and by canal with Furnes. Before the Great War, Nieuport was an important fishing centre, and this has revived to some extent, although the town was completely ruined. The 12-15th century church of Notre Dame, the 15th century cloth hall, the Templars' Tower, and the hôtel de ville were notable buildings. Nieuport-Bains, 2½ m. N., was a small watering-place in the dunes at the mouth of the Yser. It was the extreme northern point of the Western front.

Originally known as Santhoven, Nieuport was a trading centre of

some note in the Middle Ages, and was unsuccessfully besieged by the French, 1489. The Spaniards were defeated here in the battle of the Dunes by Maurice of Nassau, 1600. It was an important point in the battle of the Yser (*q.v.*), was held by French troops after the Belgians were withdrawn, and in the sum-



Nieuport, Belgium. Grand Place, with the Cloth Hall on the left, and Clock Tower, as they appeared before the destruction of the town in the Great War

mer of 1917 by the British 4th army, troops of which suffered severely in the surprise German attack on the bridgehead, July 10, 1917. Nieuport was awarded the Croix de Guerre, 1920. Pop. (1914) 4,400. See Lombartzyde.

Nieuwveld. Mt. range in the Cape Prov., S. Africa. Running W. to E. south of the Great Karoo, the mts. form an escarpment which is joined through the Stormbergen and Sneeuwbergen with the Drakensbergen, and are thus the edge of the great African plateau.

Nièvre. Dept. of France. In the centre of the country, its area is 2,660 sq. m. It includes the mountainous district of Morvan in the E. and less elevated regions in the N., while in the W. the dept. is flat. The chief rivers are the Loire, Nièvre, Allier, Aron, Cure, and Yonne. An agricultural, but not very fertile district, it produces some cereals and potatoes; cattle and sheep are reared in large numbers. There are some vineyards and much of the land is forest. There are coal and iron mines in the dept. and some large ironworks. Nevers is the capital; other places are Château Chinon, Clamecy, Cosne, and Fourchambault. Before the Revolution Nièvre was mainly covered by the province of Nivernais. Pop. 299,300.

Nigde or **NIGDEH.** Town of Asia Minor. Situated in the Konieh vilayet, about 80 m. N.W. of Adana, it is a trade centre. Pop. 20,000.

Nigella. Genus of annual herbs of the natural order Ranunculaceae. Natives of the Mediterranean region, one species was introduced

into Britain in 1548. They are popularly known as Love-in-a-mist and Devil-in-a-bush, and bear variously coloured blue, white, and yellow flowers surrounded by graceful feathery foliage. As garden flowers, they only require to be treated in the same manner as hardy annuals.

Niger. River of W. Africa. It rises in the mountainous zone on the frontiers of Sierra Leone and French Guinea, near Timbuktu. After a devious course of some 2,500 m., during which it passes through French territory and N. Nigeria, it enters S. Nigeria at Idah, and falls into the Gulf of Guinea through a

large estuary in the central portion of the coast of S. Nigeria. From its source the main river flows N.E. to its junction with the Milo, and continuing in the same general direction reaches the neighbourhood of Timbuktu, whence the direction is mainly E. almost to long. 0°. From this point it flows generally S.E. to the sea. The principal tributaries are the Milo, Bakhoy, Sokoto, Kaduna, and Benue. The delta commences near Abo, about 80 m. from the sea, and has numerous mouths, the chief of which are the Nun, Forcados, and Bonny.

The headwaters are connected with the coast by the French rly. from Kankan, on the Milo branch, to Kurussa, on the main river; and across French Guinea to the port of Konakry; and by the rly. from Kulikoro to Bamako, and thence to Kayes and Ambédi on the Senegal river, whence a line is being constructed to Dakar. The river is navigable between Kurussa and Bamako, and for a short distance above the latter place. It is again navigable from Kulikoro and Ansongo by small launches, and under favourable circumstances as far as Niamey. In Nigeria the river is divided into two navigable sections, broken by the rapids N. of Jebba, although above Sekachi it is navigable as far as Gaya in French territory, and with intervals up to Ansongo. The lower river is navigable for small ocean-going vessels as far as Baro, but navigation is becoming increasingly difficult.

Although known to the Greeks and mentioned by Ptolemy and later writers, the Niger generally



Nigeria. Map of the British West African protectorate traversed by the rivers Niger and Benue, and one of the most densely populated parts of Africa

was supposed to run W. instead of E., and is so marked on many of the old maps. In 1795 Mungo Park, under the auspices of the African Association, was sent to explore its sources, and travelled along the river from the Gambia estuary to Segu. In 1805 he again reached the Niger, but was killed near Bussa, when crossing the rapids beyond that place.

In 1822 Hugh Clapperton and Major Dixon Denham started from Tripoli and reached Bornu and the country N. of the Niger. During another expedition in 1825 Clapperton died at Sokoto, but his companion, Richard Lander, again explored the lower Niger and determined its exact course. Other expeditions followed, notably those under Macgregor Laird in 1832, Lander in 1834, Richardson and Barth, who crossed from Tripoli, Zweifel and Moustier, in 1879, and Brouet, who in 1885 discovered the Timbi source. *See Africa.*

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1857-58; Mission d'exploration du Haut Niger, J. S. Galliéni, 1885; The Niger Sources, J. K. Trotter, 1898.

Nigeria. British protectorate in W. Africa. British influence began around Lagos, which was bought from a native chief in 1861, and achieved a separate existence in 1886 as the colony and protectorate of Lagos. In the same year the National African Co., which had commenced operations in the Niger valley, became the Royal Niger Co.; its activities continued for 13 years, as it surrendered its charter in 1899.

Two protectorates of N. and S. Nigeria were formed in 1900. In 1885 the protectorate of the Oil, i.e. Palm oil, rivers was established; this became the Niger Coast Protectorate in 1893, and in 1900 was absorbed by S. Nigeria. In 1906 S. Nigeria and Lagos were joined, and in 1914 the colony and protectorate of S. Nigeria was amalgamated with N. Nigeria to form the existing colony. A strip of German Kamerun was added in 1919. Lagos is the capital.

The colony and protectorate are under a governor, to whom the lieut. governors of the northern and southern provinces are subordinate. The governor presides over an executive council for the whole area, and over the legislative council for Lagos. The administration is assisted by the Nigerian council, an advisory body without executive or legislative authority; this includes the governor, the members of the executive council, direct representatives of the chambers of commerce and mines, three other Europeans, and six natives nominated by the governor. The judicial system is everywhere adapted to the standard of intelligence of the natives.

The lower Niger and its great tributary, the Benue, divide the country into three parts: the wide land N. of both rivers on the low plateau of N. Africa with the central heights attaining 3,000 ft. over a wide area; the S.W. corner bounded by the Niger, the sea, and Dahomé, where are the Yoruba Highlands; and the S.E. corner, much lower in height except in the

new area detached from Kamerun (Cameroons). The Lagos coast was once known as the Slave Coast, but in 1917 slavery was abolished as a legal status; slave dealing has ceased, and the slave markets were suppressed by the native rulers. The trade lasted longest in the N., on the edge of the Sahara, where the Mahomedan Hausas and Fulas long retained the system of domestic slavery. The S. is tropical forest as far inland as Ibadan; the rest is savannah. The rainfall is heavy during July, etc., when the temperature is below 80° F.

Nigeria is more densely peopled than any part of Africa, except the Nile trench. The S. yields palm oil and kernels, rubber, ground-nuts, hides, coffee, cocoa, kola nuts, etc.; the N. is the tin-mining area. Coal is mined at Udi, connected by rly. with Bonny. Manganese ore and mona-



Nightingale. Male specimen of the European song-bird

zite have also been found. Trade passes seawards by many ports, of which the chief are Lagos, Port Harcourt, Bonny, and Calabar; it concentrates from the French territory to the N., W., and E. on Kano, long a famous caravan centre, and now the railhead for Lagos; this traffic is assisted by the motor road from Katsena to Kano. Nigeria's area is 400,000 sq. m. Pop. 18,000,000. See Africa; Abeokuta; Negro.

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Night. Interval between sunset and sunrise. Its length varies according to the seasons and the latitude. At the equinoxes it is twelve hours in length on every part of the earth, lengthening afterwards in one hemisphere and shortening in the other until the solstices. At the poles the period of night lasts six months.

Nightcap. Covering for the head at night. Men wore velvet nightcaps in the reigns of the

Tudors, and at that date and later they were often elaborately embroidered. Women also wore them, but their use was discontinued in the 19th century. See Cap; Head-dress.

Night Heron (*Nycticorax griseus*). Species of small heron, common on the continent of



Night Heron. Specimen of the European species

W. S. Berridge, F.Z.S.

Europe and widely distributed in the Eastern hemisphere. About two ft. long, with greenish plumage on the back, purple breast, and long white plumes at the back of the head, it commonly nests in low trees, is usually found in swampy woods, and is most active at night. It is doubtful if it ever bred in Great Britain, which it visits in the spring and autumn. The name is given in America to another species, *N. naevius*. See Boatbill; Heron.

Nightingale (*Luscinia megarhynchos*). Bird of the thrush family, famous for its sustained and varied song, indulged in far into the night as well as by day. A native of Europe from England to its eastern borders and into Asia Minor, and from Copenhagen to N.W. Africa, its length slightly exceeds 6 ins. Its upper parts are russet brown and the underside is brownish white. Arriving in Britain in mid-April, it ranges only as far N. as S. Yorkshire, and W. as far as the valley of the Exe. It visits parts of Wales, but not Ireland.

The bird's nest, composed of dead leaves and grass, is placed on or near the ground in the tangled vegetation of copse or hedgerow, and contains from four to six olive-tinted, polished eggs. While the hen is sitting, the cock frequently sits on a branch above and pours out his rich song, undeterred by the presence of an appreciative human listener only a few feet away. It feeds chiefly on the ground, consuming worms and various insects, and later the wild berries. The song is not heard much after mid-

June; but the soft *wheel* call-note and the alarm *kur*, *kur* denote its presence until it takes its departure in Aug. or Sept.

The Eastern or Thrush-Nightingale (*L. philomela*), of Europe, east of the Rhine, is somewhat larger, with the breast spotted faintly; and the Persian Nightingale (*L. Hafzi*) occurs farther E. from the Caucasus through Persia to Turkistan and occasionally to India. The nightingale figures in the mythologic story of Tereus and Philomela, the latter being transformed into the bird, whose plaintive song is supposed to be a recital of her wrongs. The name is the A.S. *nihtegale*, singer of the night. See Eggs, colour plate.

Nightingale, FLORENCE (1820-1910). British philanthropist. The daughter of W. E. Nightingale, she was born in Florence, May 12, 1820, but her early life was passed in her home at Lea Hurst, Derbyshire. When quite young she began to take an interest in hospital work, and after visiting hospitals in England and abroad, went through a course of training for nursing at Kaisers-



Florence Nightingale

After Sir W. B. Richmond

werth and in Paris, and then worked at a sanatorium in London.

In letters to The Times, Sir W. Howard Russell described the terrible condition of the sick and wounded in the Crimea, whereupon Florence Nightingale offered her services to the war office. In Oct., 1854, she sailed for the Crimea, and with 37 nurses reached Scutari, the base for the sick and wounded, on Nov. 4. Taking full control, she gradually reformed the sanitary arrangements, and enormously reduced the death-rate from cholera, typhus, and dysentery. She

remained with the troops until the end of the war in 1856. Returning to England, she was a popular heroine, and was known as the lady of the lamp. In 1907 she was given the order of merit, and she died Aug. 13, 1910. Her Notes on Nursing were published in 1858. See Nursing; consult Lives, S. A. Tooley, 1905; E. T. Cook, 1913; Eminent Victorians, L. Strachey, 1918.

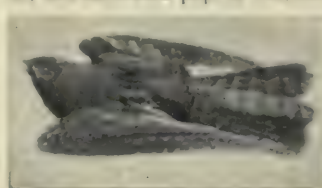
Nightjar (*Caprimulgus europaeus*). Migratory bird common in Great Britain during the summer, and spending the winter in Africa and Southern Asia. In shape it resembles a large swift, with a large, flat head and a wide, gaping mouth. It is called nightjar from its peculiar whirring cry, but flies silently by night in search of insects. The term goatsucker perpetuates an ancient and widespread delusion, due to its habit of hawking for flies round the udders of animals. It is about 10 ins. long, and its colour is grey, spotted and barred with yellow and brown. It lays its two beautifully marbled eggs on the bare ground, usually close to a small bush or tuft of heather. The nightjar family includes many genera and about 90 species, including the N. American whip-poor-will. See Eggs, colour plate.

Nightmare. Dream accompanied by feelings of terror. Anciently supposed to be caused by an evil spirit, it was, until recently, believed to be due to digestive disorder, but the modern theory of dreams regards this as only a precipitating cause, and ascribes nightmare to psychological processes. It is believed that certain primitive wishes in the subconscious mind are forcing themselves into the consciousness, and if they are not sufficiently disguised to produce the ordinary form of dream, but are likely to become clear to the sleeper, he awakes in a state of terror. See Dream.

Nightshade. Folk-name for several species of plants. Woody nightshade or bittersweet is *Solanum dulcamara*, and common nightshade is *Solanum nigrum*, while enchanter's nightshade is *Circea lutetiana*. Deadly nightshade (*Atropa belladonna*) is a perennial herb of the natural order Solanaceae, a native of Europe and N. Africa. Several annual stems proceed from the same fleshy rootstock, and form a bush 3 or 4 ft. high, with large oval leaves. The large, solitary, bell-shaped flowers are dull purple in colour, and droop on short stalks. The fruit is a large, shining black, globular berry. The whole plant is poisonous and

smells unpleasantly. Hyoscyamine and atropine are obtained from the rootstock lifted in autumn, and from fresh leaves gathered when the plant is in flower.

Nigri Sembilan. Collective name of a group of states in the Malay Peninsula, forming a British protectorate as one of the Federated Malay States (*q.v.*). It comprises the states of Sungei Ujong, Sri Menanti, Jelebu, Rembau, Johol, and Tampin, amalgamated into a confederation in 1895, and has an approximate total area of 2,550 sq. m., and estimated pop. of 130,200.



Nightjar. Specimen of the insectivorous bird, on the wing

It lies in the S.W. of the peninsula. The surface is mountainous in the interior, rising in Gunong Ledang, or Mt. Ophir, to 3,845 ft. The chief harbours are Port Dickson and Linggi. The valleys are fertile and the hill slopes heavily timbered, the principal products being timber, rice, rubber, spices, tapioca, and coffee. Tin, gold, and other minerals are mined. Seramban is the chief town.

Nigrosine. Black lustrous powder. It consists of a mixture of induline sulphonates, and is used as a dye, in calico printing, and in the preparation of black varnishes and polish. There are two groups of nigrosine, one soluble in water and the other in spirit, and there are many brands and shades of the dye. See Coal Tar; Dyes.

Nihilism (Lat. *nihil*, nothing). Name given to the tenets of the Russian revolutionary socialists. Though there had been for forty years previously parties holding similar views in Russia, it was due



Nightshade. Foliage and berries of *Atropa belladonna* or deadly nightshade

to Ivan Turgenev, in 1862, that the term came to be used. Nihilism was the result of the terrible conditions of living of the vast mass of the Russian people, and its main object was the overthrow of government by force of any kind. It aimed at the freedom of the press in Russia, freedom of speech, religious equality, equality of treatment for women, the land for the people, etc.

The nihilist movement began to become a force in 1860-70, and owing to its violent methods wholesale arrests were carried out during the next decade, in 1877-78 alone some 4,000 people being tried in Russia. In the latter year an attempt was made to assassinate General Trepov by the nihilists; in the same year General Mezentsev was killed in St. Petersburg, and the following year Prince Kropotkin was assassinated, and attempts were made to kill the tsar, Alexander II. His assassination in 1881 was followed by methods of extreme severity against the nihilists, who were gradually crushed, and new organizations came into existence with the avowed object of obtaining the aims of nihilism by more constitutional means. See Anarchism; consult also Underground Russia, S. Stepniak, 1883; Memoirs of a Revolutionist, P. A. Kropotkin, 1899; The Anarchists, E. A. Vizetelly, 1911.

Niigata. Seaport of Japan, on the W. coast of Honshu. It is the capital of Niigata prefecture and is near the mouth of the Shinanogawa. Its harbour is shallow, silts up with river alluvium, and is exposed to N. winds. Dredging operations have made some improvement, but the harbour has never justified its selection, on the opening of the country to foreign commerce, as one of the five treaty ports. The trade is almost limited to traffic with Vladivostok and other Siberian harbours. Exports are mainly rice and soya beans, which are grown extensively in the prefecture. There are ironworks and chemical manufactures. The town is intersected by many canals, and there are over 200 bridges. It is connected by rly. with other W. coast ports, Tokyo and Osaka, and is the port for the island of Sado, 32 m. away. Pop. 64,300.

Nijar. Town of Spain, in the prov. of Almeria. It stands on the Arta, 10 m. from the Mediterranean and 15 m. E.N.E. of Almeria. There is a trade in fruit, oil, wheat, and esparto. Lead, iron, and manganese mines are in the vicinity. Pop. 13,000. Pron. Nechar.

Nijinsky, VASLAV (b. 1892). Russian dancer. Born at Warsaw, and trained in the imperial ballet,



Vaslav Nijinsky.
Russian dancer

St. Petersburg, he made his first public appearance there in 1907. He toured in Europe and created a new and realistic style of ballet dancing. His first appearance in England was at Covent Garden, London, in 1911. His

famous parts were in *Petrushka*, *Carnival*, *The Spectre of the Rose*, and *The Faun's Afternoon*.

Nijmegen, NIMEGUEN, OR NYM-WEGEN. Town of the Netherlands, in the prov. of Gelderland. It lies on the left bank of the Waal, 10½ m. by rly. S. of Arnhem, and is a rly. junction. The suburb of Lent is on the right bank. The industries include brewing, the manufacture of leather, tobacco, etc. The great church, dedicated to S. Stephen, is a Gothic building begun c. 1270, with work of the 14th and 15th centuries; its fine tower was rebuilt in 1593. The town hall, in the Renaissance style of the 16th century, restored in 1882, contains a museum of antiquities.

Nijmegen was known to the Romans as *Noviomagus*, and was a seat of the Carolingian, Francian, and Hohenstaufen emperors. A free town of the empire, it joined the Hanseatic League, and in 1579 the union of Utrecht. It was held by the Spaniards, 1585-91, and was taken by Turenne in 1672. Pop. 66,000.

Nijmegen, TREATY OF. Peace that ended the war between France and a coalition formed by the Empire, Spain, and the Dutch Republic. France and Holland signed on August 11, 1678, and the others later, the final arrangement being made about a year afterwards. By it France received Franche Comté and the control of Lorraine, and some of the fortresses of the Netherlands, while to her ally, Sweden, were returned territories in Germany taken from her during the war. This treaty is generally regarded as marking the height of Louis XIV's power.

Nijni-Novgorod. Government of central Russia. Its chief river is the Volga, and its capital Nijni-Novgorod. The country generally is low-lying, swampy, and wooded, one-third of its area consisting of forest land. Agriculture and

cattle-breeding are little developed. Its area is 19,789 sq. m. Pop. 2,080,000. *Pron. Nizhny.*

Nijni-Novgorod. Capital of the govt. of the same name in Russia. Situated at the confluence of the



Nijni-Novgorod
arms

Volga and the Oka, and on the Moscow-Nijni-Novgorod Rly., 250 m. N.E. of Moscow, it is divided into three parts: the upper town on three hills, surmounted by a citadel, with the chief administrative and military buildings; the lower town, on the right bank of the Volga; and the Kunavino suburb, between the Oka and Volga, where the great fair is held.

Among its numerous ecclesiastical buildings the cathedral of the Transfiguration, the church of the Annunciation, and the Pecherski convent deserve notice. There is a brisk trade in cereals, metals, and fish. The great fair, which lasts from July 25 to Sept. 10, has a world-wide reputation. From 1550 it was held at Makariev, but was transferred to Nijni-Nov-

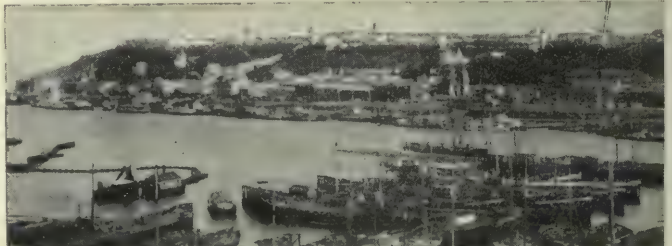
gorod when Makariev was burnt down in 1817. The town was founded in 1221 by Yuri, prince of Suzdal-Vladimir, and after the downfall of the Kazan Tartars, in 1552, became the chief centre of exchange for Russian and Asiatic goods. Pop. 112,300.

Nikisch, ARTHUR (1855-1922). Hungarian musician. Born at Szent-Miklos, Hungary, Oct. 12, 1855, he studied music as a child in Vienna, where he became a violinist in the imperial orchestra



until appointed conductor at the Leipzig theatre. He conducted the *Symphony Orchestra* at Boston, 1899-93, orchestras at Budapest, Hamburg, and Berlin, and the *Gewandhaus* concerts at Leipzig. He died Jan. 23, 1922.

Nikko. Religious centre of Japan, in Honshu. It is almost due N., and 91 m. by rly. from Tokyo, the terminus of a branch line near

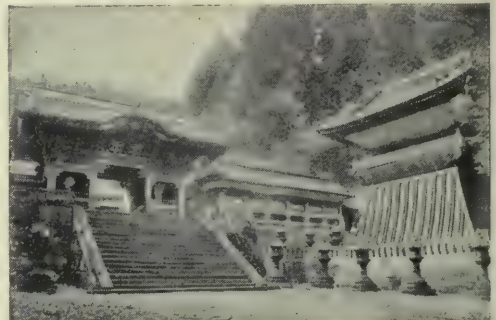


Nijni-Novgorod, Russia. City and harbour on the Volga, from the fair-ground. On the hill across the river is the Kremlin or fortress

the Daiyagawa, an affluent of the Kinugawa. N.E. to S.W. lies the Nikko range with peaks between 5,000 and 8,000 ft. alt. The district is celebrated for its scenery, the tombs of Shogun emperors, and the numerous temples.

Nijni Tagilsk. Village and mining centre of E. Russia. It is in the govt., and 140 m. N.E., of Perm, on the river Tagil and the Ural Rly. Pop. 45,000.

Nikē. In Greek mythology, the goddess of victory, called *Victoria* by the Romans. She was the



Nikko, Japan. Courtyard and temples in the mausoleum of the Shogun Iyeyasu

Nikolaev. Fortress and commercial port of S. Russia. It is in the govt., and 40 m. N.W., of Kherson, at the junction of the rivers Ingul and Bug, and on the Kharkhov-Nikolaev rly. It was the headquarters of the Black Sea fleet, and has numerous shipyards. Pop. 93,000.

Nikolaevsk. Town of S.E. Russia. It is in the govt., and 100 m. S.W., of Samara, on the Irghits. A trade is done in corn and cattle. Pop. 13,000.

Nikolaevsk on Amur. Town of Asiatic Russia. Situated 25 m. from the mouth of the Amur, the port was founded in 1850, and was the Russian naval base on the Pacific, 1860-72. It is a centre for the salmon and sturgeon fishery on the Amur, and has an annual fur fair and some trade in timber. Pop. 6,000.

Nikolaevskaya. Town of S.E. Russia. It is in the govt. of Astrakhan, close to the bank of the Volga, opposite Kamishin. It has sprung up rapidly, chiefly owing to its salt works. Pop. 18,000.

Nikolaistad or **Vasa.** Seaport of Finland. A rly. terminus and small port almost opposite the island of Björkö in the Gulf of Bothnia, it is the capital of the dist. of Vasa. It has a nautical school and shipbuilding yard, and trades in timber products, oats, butter, and fish. The original town founded in 1606 was burned down in 1852, and was rebuilt on its present site, 3 m. away to the N.W., in 1862. From Nikolaistad in 1809 the Russians marched over the frozen Baltic to Umea in Sweden. Pop. 22,000.

Nikolsburg. Town of Moravia, Czecho-Slovakia, now known as Mikulov (*q.v.*).

Nikopolis (Gr., city of victory). Name of several ancient cities, of which the most important were: (1) In Epirus, situated on a strip of land opposite Actium, in the Ambracian gulf. It was founded by Augustus to celebrate his victory over Antony, Sept. 2, 31 B.C., which made him the master of the Roman world. Games were held here every four years in honour of Apollo, to whom a magnificent temple was erected. (2) In Lower Egypt, on the canal leading from Canopus to Alexandria. Also founded by Augustus, it commemorated the final defeat of Antony and Cleopatra. (3) In lesser Armenia, on the Lycus, built by Pompey in honour of his victory over Mithradates, 65 B.C.

Nikopolis or **NIKOPOLI.** River port of Bulgaria. It is situated on the S. side of the Danube, about 25 m. N.E. of Plevna, with which it is connected by rly., and is linked

by ferry with a rly. on the N. side of the river which connects with the Rumanian rly. system. In a fertile country, famous for its wine, Nikopolis has a citadel, an ancient castle, and a Byzantine church. Here the Turks defeated Sigismund of Hungary in 1396, and the Russians defeated the Turks in 1829. The town was damaged in 1877 during the Russo-Turkish War. Pop. 8,000.

Nile. River of Africa. Venerated by the Egyptians as the cause of their prosperity, its sources remained unknown until the discoveries of Speke in 1858 and Sir Samuel Baker in 1860 revealed its great reservoir-lakes Victoria and Albert. The ancients had little knowledge of the river above Meroë (*q.v.*), and no knowledge of the causes of the annual inundations of the Lower Nile. Herodotus and other writers discuss this problem, without arriving at its solution. At a later period Ptolemy speaks of two streams issuing from two lakes and afterwards uniting into one river, which was joined by the Astapus to form the main course of the Nile. This conception is illustrated in the maps of the 15th and 16th centuries, and until James Bruce discovered the source of the Blue Nile, in 1770, little more than this was known of its course.

Victoria or Somerset Nile

The Nile leaves the Victoria Nyanza at its N. end, and pouring over the Ripon Falls proceeds through Lake Kioga (Chioga), and thence generally N.W. until it reaches the N. extremity of the Albert Nyanza. This section of the river is known as the Victoria or Somerset Nile, and below Foweira is impeded by a series of rapids culminating in the Murchison Falls, where the river drops 401 ft. in three cascades to the level of the Albert Nyanza. That lake is fed by the river Semliki, which drains the Edward Nyanza and forms, with the Kagera and other rivers flowing into the Victoria Nyanza from the S., the extreme head-waters of the Nile. From the N. extremity of the Albert Nyanza the river, here the Bahr-el-Jebel and later the White Nile, flows generally N. to the Mediterranean. At Rejaf, 15 m. S. of Gondokoro, it enters the region of the plains and continues thence to Khartum, some 1,096 m. to the N. Between these two points the Nile is navigable.

About 480 m. N. of Rejaf the Bahr-el-Ghazal enters the Nile from the W., and 50 m. farther is the junction with the Bahr-el-Zeraf. Some 530 m. S. of Khartum and 31 m. from the Bahr-el-Zeraf the Nile is joined by the Sobat,

flowing from the highlands of Abyssinia, and at Khartum the waters of the Blue Nile mingle with the main river. From that point there are no considerable tributaries with the exception of the Atbara, which flows into the main river 24 m. S. of Berber. In its course through the Nubian Desert the Nile makes two great bends, and from Khartum as far as Assuan it is dangerous for navigation. Between these two points occur six cataracts. At Assuan is the great Nile Barrage.

The Annual Flood

The importance of the Nile to Egypt and the Sudan cannot be overestimated. Without the annual inundations which fertilise the soil and provide the needful water for irrigation the whole country would be a desert. Recent progress, therefore, has been in the direction of conserving and making the fullest use of the waters of the Nile by improving upon and extending the irrigation methods of the ancient Egyptians and the Romans. In the Nile estuary irrigation is largely regulated by the great barrages at Damietta and Rosetta, and by means of an extensive system of canals.

The Nile flood is an annual phenomenon comparable in regularity with the monsoon. The head-waters of the river receive water from the constant rains of the equatorial areas round the great lakes; this supply passes N. and is subject to great evaporation, and, being regulated by seepage, or percolation, into the swamps near Lake No, arrives in practically a constant volume by the White Nile at Khartum. The Blue Nile flood, enforced by that of the Atbara, is dammed by the Assuan barrage and held back for irrigation.

In Jan., 1920, the Nile projects commission was appointed by the Egyptian government to give its opinion on the proposals for the further regulation of Nile water supply. These include a barrage on the White Nile, a few miles S. of Khartum, which is to form a reservoir several times more capacious than that at Assuan, and a weir at Sennar, controlling the irregular torrents of the Blue Nile, and rendering them available for irrigation of nearly half a million acres in the Sudan. The most ambitious scheme is the formation of a barrage at the N. end of Lake Albert.

The most important places on the river are Damietta and Mansura, on the Damietta branch, Cairo, Beni-Suweif, Manfalut, Assiut, Girga, Kena, Assuan, Koresko,

Halfa, Berber, Atbara, Khartum, Omdurman, Kodok (Fashoda), Lado, Gondokoro, and Wadelai, on the main river. The length of the Nile as far as the Victoria Nyanza is 3,526 m. See Assuan; Dam; Egypt.

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Nile, BATTLE OF THE. British naval victory, Aug. 1, 1798. The treaty of Campo Formio, Oct. 17, 1797, had practically made the Mediterranean a French lake. Mutiny had weakened the British fleet, and when Spain entered the war, the fleet had been compelled to abandon the Mediterranean. Bonaparte was instructed to seize Malta, drive the English from all their possessions, occupy Egypt, make a channel through the Isthmus of Suez, and secure the Red Sea for France. Lord St. Vincent, who was blockading Cadiz, heard of the armament preparing at Toulon, and sent Nelson to look into the ports and observe the proceedings of the French. No proper force could be given to him, and his flagship, the *Vanguard*, was dismasted in a gale which left the French untouched. They put to sea on May 19, took possession of Malta, and were joined by convoys from Genoa, Ajaccio, and Civita Vecchia.

In England it was thought that Bonaparte might aim at Naples or Sicily, or land an army to invade Portugal, or strike at Ireland. Nelson, reinforced, sought the enemy for many weeks, deploring the want of frigates to scout for him. On Aug. 1 he discovered the French transports at Alexandria, and their fleet of 13 sail of the line and 4 frigates, commanded by Brueys, anchored in a broken line, in Abukir Bay. Nominally the French fleet was far superior to his own.

Nelson's plan was to attack the French van and centre, and to anchor, if it might be, inside and outside the French line. If Brueys was not surprised by Nelson's attack, he was unprepared for the English ships going between him and the shore. The *Goliath*, *Zealous*, *Orion*, *Theseus*, and *Audacious* all passed inside the enemy's line at about 7 p.m., anchoring, and rak-



Nile. Map of the basin of the river from the Victoria Nyanza to the Mediterranean

ing with terrific fire the headmost ships of the squadron—*Guerrier*, *Conquerant*, *Sérieuse*, *Peuple Souverain*, and *Spartiate*. The *Vanguard*, flying Nelson's flag, anchored by the stern outside and abreast of the *Spartiate*, and the *Minotaur* and *Defence* followed. The *Bellerophon*, *Majestic*, *Swiftsure*, and *Alexander* successively attacked the three-decker *Orient*, which flew the French admiral's flag, the first two named suffering serious loss. A tremendously destructive fire was poured into the enemy. The headmost ships of the French line were completely overcome, and at

nearly straight horns. The females are smaller, brown, and hornless. The animal is remarkable for the comparative shortness of the hind limbs, and the rapid slope of the back line. It is found among the plains and low hills of India.



Nilgai. Male specimen of the antelope which is found in the plains and low hills of India

about 10 o'clock the *Orient* caught fire, and was soon ablaze. The *Guillaume Tell* and *Généreux* were fugitives. See Egypt; Nelson; Sea Power.

Niles. City of Ohio, U.S.A., in Trumbull co. It stands on the Mahoning river, 60 m. S.E. of Cleveland, and is served by the Baltimore and Ohio and other rlys. Printing presses, iron, steel, and tin, boilers, fire-bricks, and electric cars are made. Niles was incorporated in 1864, and became a city in 1895. Pop. 13,100.

Nilgai (*Boselaphus tragocamelus*). Species of antelope, found in India. It stands between 4 ft. and 5 ft. high at the withers. The adult male is brownish grey, with white markings on the face and throat, white rings at the fetlocks, whitish underparts, and short, smooth,

Nilgiri or **NEIGHERRY HILLS**. Hill range of the Deccan, India. The Blue Mts., so called from the overhanging haze which characterises the hills when seen from the plains, form a knot of high ground, alt. 6,000 ft., at the junction of the E. and W. Ghats. To the S. the Pulghat Gap separates the sharp slopes from the S. continuation of the W. Ghats; to the N. the Wynaad tableland stretches to Mysore. The high ground consists almost entirely of open, grassy "downs," separated by forested glades, from which rise the peaks. Dodabetta, 8,760 ft., is the culminating point, while close to it Snowden, Elk Hill and Club Hill, all higher than 8,000 ft., are on the edge of an amphitheatre within which lies Ootacamund. The elevation modifies the climate, so that the Nilgiris are a hot-weather resort for Europeans. Cinchona, jalap, ipecacuanha, and coffee are grown upon numerous plantations. Of the natives the Todas are pastoralists, the Badagas tillers of the soil; primitive Kurumbas and Irulas live in jungles on the forested slopes.

Nilgiris. Dist. of Madras Presidency, India, comprising almost entirely the area of the Nilgiri Hills. Only about one-tenth of the total area is tilled, chiefly for native food grains and plantation products, coconuts, etc. Its area is 1,009 sq. m. Pop. 118,600.

Nilometer. Instrument or gauge for measuring the height of the annual floods of the Nile. There are many nilometers, and their number indicates the importance of the flood water to an almost rainless country like Egypt.

Nilotic. Term denoting the E. division of the true negro race. Wholly within British control, they occupy the valleys and marshlands of the upper Nile basin, to which they became confined by the pressure of pastoral tribes of Hamitic stock. Tall, slim, narrow-headed, and the darkest of all negroes, they are distinguishable from the W. or Nigritic division by their more retreating foreheads and longer legs. Mostly unclad, their personal ornaments include metal and ivory armlets, ostrich shell beads, and lip plugs; most tribes also extract the lower incisors. They practise cattle-breeding and agriculture, and subsist largely on milk and fish. Their round huts, with conical or domed roofs, are sometimes supplemented by bachelor-huts on tall posts and by pile granaries. They use clubs, socketed spears, bows, and sometimes wrist-knives, with wood or hide shields.

The principal tribes are the Shilluk, Dinka, Nuer, Acholi, Kavirondo Jalu, Bari, Latuka, Lango, Nandi, Suk, and Turkana. Their southernmost representatives, the Maasi, exhibit the fullest infusion of Hamitic blood and culture. See Negro.

Nilsson, CHRISTINE (1843-1921). Swedish vocalist.

Born near Vexjö, Sweden, Aug. 20, 1843, she studied in Stockholm and Paris, where she made her début in 1864. Three years later she visited England, singing with great success in opera and oratorio. She toured in Europe and America and retired in 1891, shortly after her marriage. She died Nov. 22, 1921.



Christine Nilsson,
Swedish vocalist

Nim (*Azadirachta indica*). Tree of the natural order Meliaceae, also called neem, margosa, or bead-tree. A native of India, it has leaves divided into numerous oval leaflets with toothed edges, and branching panicles of small bluish flowers, succeeded by olive-like purple fruits, each containing a single seed.

The latter has a natural perforation, which causes it to be used in the construction of rosaries, and on this account Roman Catholics call the tree Arbor Sancta. The timber is useful for building, and the bark affords a tonic, whilst the roots are used as a vermifuge and the fresh leaves as a natural poultice for glandular swellings and in rheumatism. Dried leaves inserted between the leaves of books, etc.,

repel the attacks of destroying insects of all kinds. The same useful property resides in the seeds, which are powdered as an insect-poison, and dissolved in water as a hair-wash. The fruit yields the medicinal margosa oil, which serves also as a dye for cotton goods.

Nimach or **NEEMUCH**. Town of Central India, in Gwalior. It is a military station near the border of Rajputana on the rly, midway between Indore and Ajmer Merwara. Pop. 12,000.

Nimbus (Lat., a cloud, divine effulgence). In art, the halo encircling the head of a holy personage. It occurs in Egyptian, Buddhist, and Greco-Roman art, from the last of which it was probably adopted by Christian painters and sculptors in the 6th century. See Aureole; Halo.

Nîmes. City of France, capital of the dept. of Gard. It is situated in a fertile plain W. of the Rhône and E. of the Cévennes Mts., 25 m. N. of the Mediterranean and 174 m. from Lyons. Apart from the Roman remains the chief buildings are the cathedral of S. Castor, the churches of S. Baudile and S. Paul, the citadel, dating from the 17th century, and the several museums. A former Jesuit college houses one collection and also the public library. The museum of painting and sculpture includes a collection of pictures purchased by the city in 1875. There is a palais de justice. The industries include the manufacture of silk and other textiles, and a trade in wine. The old fortifications have been replaced by boulevards, while another public amenity is the Fountain Gardens. The city has a service of electric tramways and several theatres.

One of the most ancient and interesting of French cities, Nîmes is famous for its Roman remains. It was founded by Augustus, and an amphitheatre and other features of a typical Roman city were soon erected. The amphitheatre, owing to careful attention, is in an excellent state of preservation. Its vaults, which resemble a natural cavern, are notable, and it is said to have held over 20,000 persons. The Maison Carrée is a perfect Roman temple. The Temple of Diana and two Roman gates still remain, but nothing is left of the capital and some other Roman buildings. The ruined Great Tower, another Roman edifice, stands on a hill called Mont Cavalier, 375 ft. high. Just outside are the



Nîmes arms



Nilometer on the island of Roda,
near Cairo

From a sketch by D. Roberts, R. A.



Nîmes, France. 1. One of the baths in the ancient *Thermae*, dating from 25 B.C. 2. *Maison Carrée*, a Roman temple erected about A.D. 1, one of the best preserved specimens existing. 3. Roman amphitheatre, built 1st-2nd century A.D., containing 34 tiers of seats, capable of holding 20,000 spectators. 4. Cathedral of Notre Dame et S. Castor, built 10th-11th century, on the ruins of a Roman temple

Pont du Gard, a Roman aqueduct, and the remains of some baths, both built under Agrippa.

Having taken the existing village from the Gauls, the Romans made Nîmes into one of their greatest cities. Augustus, who was mainly responsible for this, built its extensive walls. After the fall of the Roman empire the city suffered decline. In 1185 it became part of the county of Toulouse and was again surrounded with walls. For a short time in the 16th century there was a university here. In the time of the Reformation it was a Protestant stronghold and the scene of considerable bloodshed. Four ecclesiastical councils were held at Nîmes, the most important being the one held under the presidency of Pope Urban II in 1096. Alphonse Daudet was one of the several eminent men who were born in the city. Pop. 80,500. See *Maison Carrée*.

Nimrod. In the O.T., a son of Cush, and a notable hunter and warrior (Gen. 10). He ruled at Shinar and is regarded as the founder of the Assyrian power.

Nine Pins. Wooden pieces with which the game of skittles or nine pins is played. The object of the game is to knock the pins over with a wooden ball at the fewest possible attempts. In the U.S.A. the popular game of bowling has developed from nine pins. When,

owing to the amount of gambling it occasioned, this game was forbidden by law, an extra pin was added, and the game continued with ten pins. See *Skittles*.

Nineteenth Century and After, THE. British monthly review. It was established March, 1877, by James T. Knowles. His guiding principle was the publication of signed articles by men and women of note. Its initial issue contained a prefatory sonnet by Tennyson and contributions by Matthew Arnold, Gladstone, Huxley, and Cardinal Manning. The last two words in the title were added in 1901, the Janiform head on the cover being adapted by Sir Edward Poynter from a Greek coin of Tenedos. The review has been the arena of many famous discussions, notably on women's suffrage and the Channel tunnel. On Knowles's death in 1908, the control passed to his son-in-law, W. Wray Skilleck.

Ninety-Eight. Term used in connexion with the rebellion that broke out in Ireland in 1798. England was at war with France, and there was general unrest. A small rebellion in Ulster was crushed and the whole country placed under martial law. Under this there was a certain amount of terrorism, and in May rebellion broke out in Kildare. Other Leinster counties followed, but the risings were

quickly put down. In Wexford, however, the movement was more serious, and 15,000 rebels seized the county town there and set up a camp on Vinegar Hill. A large body attacked and almost destroyed New Ross, but the insurgents were defeated when they marched to Arklow. On June 21 General Lake attacked their camp on Vinegar Hill, and his complete victory there practically ended the rising. The movement is commemorated in J. K. Ingram's verses, *Who fears to speak of '98?* (See *Vinegar Hill*.)

In the same way the Jacobite risings of 1715 and 1745 are known respectively as the 'fifteen and the 'forty-five. See Charles Edward; Jacobites; James Edward.

Nineveh. Assyrian city on the left Tigris bank opposite Mosul, Mesopotamia. Its walls, enclosing 1,800 acres, with 15 gates and many towers, were protected on three sides by a moat filled from the Choser tributary. This crossed the city to the Tigris, once flanking its W. wall for 2½ m., but now separated by a broad crescent of silt. A double earthwork defended the E. wall.

A remote neolithic settlement, confirmed by obsidian implements from the lowest Kuyunjik stratum, preceded an immigration of metal-using people (Gen. 10) from S. Babylonia, whose fish-goddess Nina gave her name to the city. Wor-

shipped in a temple repaired by Hammurabi, about 2100 B.C., she became identified with Ishtar. A Mitannian domination, about 1400, preceded the outburst of Assyrian conquest under Shalmaneser I, about 1300: he restored the temple, although making Calah his capital. It was made a royal residence by Ashurbelkala, about 1100 B.C.

Nineveh owed its chief renown to Sennacherib (2 Kings 19), who erected a majestic palace at Kuyunjik and an arsenal at Nebi Yunus, the traditional tomb of the prophet Jonah. Besides canalising the city, he laid out a park wherein he acclimatised exotic animals and plants, including the Arabian cotton. Esarhaddon widened the streets and built a palace at Nebi Yunus. In Ashurbanipal's palace, N. of Sennacherib's, Rassam found, 1854, an immense cuneiform library, now in the British Museum. The fall of the city, foretold by Nahum and Zephaniah, was achieved by the Median Cyaxares and the Babylonian Nabopolassar, 606. Its memory was already effaced when Xenophon traversed its ruins, 401 B.C., and a Sassanian village grew upon the mounds. See *Babylonia*; *Kuyunjik*; *Mesopotamia*; consult also *The Palaces of Nineveh and Persepolis Restored*, J. Fergusson, 1851; *Discoveries in the Ruins of Nineveh and Babylon*, Austen H. Layard, 1853.

Ningpo. City in Che kiang prov., China. It is situated at the junction of the two branches of the river Yung, 12 m. from the mouth. Ningpo is 1,200 years old; the site of old Ningpo, which is said to have existed 2205 B.C., is at some

distance from the present city. The circuit of the walls, built about 870, is 5 m. Portuguese traders visited Ningpo in 1522, but were expelled in 1542. The city was occupied by the British, 1841, and declared a treaty port by the treaty of Nanking in 1842. A British consulate was established here in Dec., 1843, and a customs station opened in 1801. Pop. 465,000.

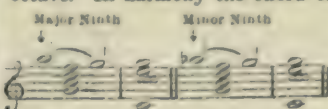
Ninian OR **NINTAS** (d. c. 432). British bishop and saint. A native of N. Wales, he was educated in Rome, and being consecrated bishop, built what is said to have been the first stone church in Britain at Whithorn, or Candida Casa, in Galloway, and dedicated it to S. Martin of Tours. A missionary among the Southern Picts, he is credited with maintaining the Catholic faith against the teaching of Pelagius. His festival is Sept. 16.

Ninib. Babylonian and Assyrian deity. Appropriating the attributes of Ningirsu of Lagash and other vegetation gods, he was, as

son of Enlil (Bel), deemed to represent the beneficent vernal sun, in contradistinction to Nergal, representing the destructive summer heat. Ashurnatsirpal and others invoked him as the god of battles.

Ninnis Glacier. Ice field on the coast of King George V Land, Antarctica. It is about 50 m. E. of the similar but smaller Mertz glacier. It was discovered by the Mawson Expedition (1911-14) and named after Lieut. Edward Ninnis, a member of the expedition who met his death there.

Ninth. Musical interval, a semitone or a tone greater than an octave. In harmony the chord of



the ninth is recognized as one of the fundamental discords, obtained by adding another third to a chord of the seventh. The ninth usually resolves upon the octave, as above.

See *Discord*; *Interval*; *Harmony*; *Resolution*; *Seventh*.

Niobe. In Greek mythology, the wife of Amphion, king of Thebes, by whom she had twelve children. She was so proud of this that she mocked the goddess Leto or Latona, who had only given birth to two children, whereupon the offended goddess incited



Ningpo, China. One of the main riverside streets of the city



Nineveh. Reconstruction of the palaces on the banks of the Tigris, from plans of the existing remains. The great tower on the left represents the supposed tomb of Sardanapalus; on the right is the palace of Esarhaddon

From Layard's *Monuments of Nineveh* (2nd series), by courtesy of John Murray

her son Apollo and her daughter Artemis to slay all the children of Niobē with their arrows. Niobē was changed into a stone, in which form she incessantly wept for her lost children, streams of water trickling down the stone. The legend of Niobē has frequently been treated in art. The group of Niobē at Florence is a copy of one which is attributed to Scopas or Praxiteles. See Magnesia.

Niobium OR COLUMBIUM. One of the metallic elements. Chemical symbol Nb. A rare element, it is steel grey in colour, with fine lustre, is not attacked at normal temperature by either hydrochloric or nitric acid, or by any mixture of the two, but dissolves readily in concentrated sulphuric acid. The separation of the metal was accomplished in 1846. The mineral columbite from which the metal is obtained is found in the U.S.A., Bavaria, Bohemia, and near Falun in Sweden. The metal occurs also associated with uranium and yttria in other rare minerals in Norway and Russia. The metal forms several oxides, but has not yet been put to any industrial use.

Niobrara. River of the U.S.A. Rising in the S.E. of Wyoming, it flows E. through Nebraska, and joins the Missouri on the right bank at Niobrara. It is a rapid, unnavigable river 450 m. long.

Niort. City of France. It stands on the left bank of the Sèvre Niortaise, 38 m. from La Rochelle, in the dept. of Deux Sèvres, of which it is the capital. Its buildings include the beautiful church of Notre Dame, built in the 16th century. The churches of S. Andrew and S. Hilary are modern. The keep of the castle still stands, and there is a fine modern town hall, and a palais de justice. The old town hall houses a museum, and there is a botanical garden. The industries include tanning and the making of gloves and boots, while there are many market gardens in the vicinity.



Niort arms

Niort grew up around a castle built by the count of Anjou, in the 12th century, and until the river silted up was a flourishing port. During the wars of religion it was a Huguenot centre, and it was several times besieged; in 1588 the cathedral of S. Andrew was destroyed. Pop. 23,000.

Nipigon. Lake and river of Ontario, Canada. About 30 m. N. of Thunder Bay on Lake Superior, it is 70 m. long and 40 m. broad;

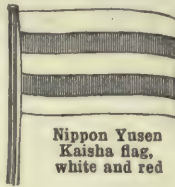


Niobē weeping with her youngest daughter. From a sculpture attributed to Scopas or Praxiteles

Uffizi Gallery, Florence

area 1,730 sq. m. In it are about 1,000 islands, and the Ogoki flows into it from the N. The river of the same name passes from the lake into Lake Superior, and is famed for its trout.

Nipissing. Lake of Ontario, Canada. It lies N. of Lake Huron, is 50 m. long and about 20 m. broad; area 330 sq. m. The Sturgeon flows into it and the French River, 55 m. long, carries its waters to Lake Huron. It contains many islands. The lake is intended to form part of the Georgian Bay canal. The part of Ontario around it is known as the Nipissing dist.



Nippon Yusen Kaisha flag, white and red

ese steamship company, also known as The Japan Mail Steamship Company, Ltd. An amalgamation of two subsidised steamship companies, it was formed in 1885, and carried on a trade between Japan and Asiatic ports. After the Chinese War of 1894, when the vessels were used as troopships, the service was extended to America, Australia, and Europe. The line

carries most of the Japanese traffic, in 1921 running fortnightly services from Japan to England, and from Hong Kong and Japanese ports to the W. coast of America, as well as a monthly service from Japan to Australia.

Nippur. Sumerian city at Nuffar on the Shatt-en-Nil, 20 m. E.N.E. of Diwaniya, central Babylonia. Its identification with Calneh (Gen. 10), and that of Ezekiel's river Chebar with the Nil canal, are tentative. It was examined by Layard 1851, and excavations by Peters, Haynes, and Hilprecht, 1889-1900, revealed a continuous history from reed-huts on neolithic marshes to palaces of Parthian kings. A centre of religion and learning, its Enlil temple, restored intermittently from Naramsin to Ashurbanipal, ultimately became a Seleucid fortress. Its yield of clay tablets included 40,000 temple records and 730 business documents, which had belonged to brokers and bankers of the Persian kings of the 5th century B.C. See Bel; Deluge Legends; Parthia.

Nirvāna (Skt., extinction). Buddhist term for the spiritual state attained by one who has conquered self and, by the exercise of self-sacrifice, sympathy, loving thought, and deeds of kindness, extinguished desire. The attainment of Nirvāna implies the extinction of personality and the union of the individual with the infinite. See Karma.

Nisan. First month in the Jewish eccles. year and seventh in the civil or secular. It corresponds approximately to the Christian month of April. The name Nisan was adopted from the Babylonian calendar after the Captivity (Neh. ii, 1) and replaced the Jewish name of Abib (q.v.).

Nish. Town of Yugo-Slavia, in Central Serbia, the ancient Naissus, and the chief city in Upper Moesia. It is situated on the Nisava, is the junction of the rly. from Belgrade,



Nish, Central Serbia. Façade of the cathedral

150 m. N.W., to Sofia-Constantinople with the line to Salonica, and has extensive rly. works. It was the birthplace of Constantine the Great. On the outbreak of the Great War, the Serbians made it their temporary capital. It was captured by the Bulgarians Nov. 5, 1915, but recaptured by the Serbs on Oct. 12, 1918. Pop. in 1914, about 25,000.

Nish, BATTLE OF. Fought between the Bulgarians and the Serbians, Nov. 2-5, 1915. In Oct., 1915, Bulgaria joined the Austro-Germans in their invasion of Serbia, and on Oct. 11, three days before she declared war, she was moving in force against Nish, on the N. towards Kniashevatz on the Timok, and on the S. towards Pirot in the region of the Nishava, both operations being directed by General Bogatcheff. In the district of Pirot the Serbians, under Stepanovitch, after gallant efforts, were compelled, on Oct. 26-27, to abandon the commanding Drenova Glava height. After a fierce engagement, Stepanovitch had to evacuate Pirot next day, and Kniashevatz fell the day afterwards. By Nov. 2 Bogatcheff, advancing from Pirot and Kniashevatz, was within a short distance of Nish. From Nov. 2-5 the Serbians held up the Bulgarians in front of Nish, but on Nov. 5 they abandoned it to their foes.

Nishapur. Town of Persia, famous as the birthplace and burial place of Omar Khayyám (*q.v.*). It is in the prov. of Khorassan, about 50 m. S.W. of Meshed, and trades in cotton and woollen goods and fruits, particularly almonds. Some 30 m. N. of it are turquoise mines. Pop. 15,000.

Nisibis. Ancient city of Mesopotamia, also called Antiochia Mygdoniae. It is the modern Nisibin. It changed hands several times in the many wars between the Romans and the Parthians and Persians, but finally passed into the dominion of the last, after the disastrous expedition of Julian the Apostate, A.D. 363. Nisibin was included by the Turks in the vilayet of Diarbekir. During the Great War it was the E. terminus of the Bagdad rly., and a place of military importance. Pop. 10,000. See Mesopotamia.

Nisi Prius (Lat., unless before). English law term. By Magna Carta, it was ordered that certain writs of assize should be tried before justices who should be sent into every county at least once a year. At a very early date it became customary to try other actions before the judges of assize. Jurors used to be summoned, by writ of

venire, to the courts at Westminster on such and such a day, unless before that day the king's justices should come into their county. A trial of a civil cause before a judge of assize was therefore called a trial at nisi prius; and the term is still adhered to, and recognized by statute. A justice of assize sits by virtue of a commission of assize, gaol delivery, and nisi prius to this day.

Nith. River of Scotland. Rising in the W. of Ayrshire, it flows 55 m. S.E. through Dumfriesshire to the Solway Firth, 13 m. below Dumfries. The district through which it flows is known as Nithsdale.

Nithsdale, WILLIAM MAXWELL, 5TH EARL OF (1676-1744). Jacobite leader. Son of Robert, 4th earl, in 1715 he joined Derwentwater in the rebellion, and with other Jacobite leaders was captured at Preston and sentenced to death. Nithsdale was saved by his wife, who, after pleading vainly with the king, paid a farewell visit to her husband in the Tower, disguised him in a hood and cloak, and got him safely away. Nithsdale escaped to Calais. His wife was arrested, but later was permitted to join him. His estates were forfeited, but restored to his son on the earl's death on March 20, 1744. The title, however, was forfeited.

Nitra. Town in the Slovakia division of the Czecho-Slovak republic, also known as Nyitra (*q.v.*).

Nitrates. In chemistry, name given to the salts or compounds of nitric acid, i.e. those formed by the substitution of metals for the hydrogen of nitric acid (*q.v.*).

Nitrator. Chemical apparatus in which the operation of nitration is conducted. The essential features are a container usually constructed of iron or lead, but sometimes of earthenware, fitted with means for heating or cooling the contents, either by a jacket or internal coils for steam or water circulation, pipes for the admission of raw materials and acids, provision for the removal of fumes, and means of agitating the contents. For nitro-glycerin a lead vessel is generally used, and owing to the sensitive nature of the explosive compressed air is injected for agitation. A drowning pit is also arranged below, into which the contents may be quickly dumped if any dangerous action commences. Nitro-aromatic compounds are dealt with in large iron nitrators fitted with mechanical agitators of many types. These frequently have a capacity of 1,000 gallons, producing about 4 tons of explosive at each operation. See Explosives.

Nitre. Popular name given to potassium nitrate (KNO_3) or saltpetre (*q.v.*). See Potassium.

Nitre-cake. By-product in the manufacture of nitric acid from sodium nitrate and sulphuric acid. Chemically it is known as acid sodium sulphate or bisulphate of soda (NaHSO_4). Very large quantities were produced during the Great War in the manufacture of nitric acid for explosives. Nitre-cake is used as an acid flux in the decomposition of minerals and in the dyeing industry.

Nitric Acid or **AQUA FORTIS** (HNO_3). Powerful acid compound of hydrogen, nitrogen, and oxygen. Glauber seems to have been the first to prepare it by the modern process of heating together nitre and sulphuric acid. Lavoisier and Cavendish first proved its exact composition. Nitric acid is made on a large scale by heating Chile nitre with sulphuric acid in cast-iron retorts. The newer method of making nitric acid is by the direct combination of the nitrogen and oxygen of the atmosphere by means of an electric arc. The process is carried out on a large scale by the Birkeland and Eyde furnace at Notodden in Norway. Nitrogen peroxide is the chief gas formed, and this, absorbed by water, yields nitric and nitrous acids, the last named acid being subsequently converted into nitric acid. Nitric acid is also made by electrical processes.

Nitric acid is largely used for the manufacture of explosives—nitro-glycerin, gun-cotton, trinitrotoluene ("T.N.T."), etc.—and for making aniline dyes. It forms a series of salts known as nitrates, some of which are largely employed in the industries. Silver nitrate is valuable in photography, lead nitrate, iron nitrate, and aluminium nitrate in dyeing and calico-printing, and barium and strontium nitrates in the manufacture of fireworks.

POISONING BY NITRIC ACID. Two drachms of concentrated nitric acid have proved fatal. As soon as the acid is taken, violent pain is felt in the mouth, gullet, and stomach, followed by severe vomiting. The lips and teeth are stained yellow, and the mucous membrane is excoriated. The tongue becomes swollen, symptoms of collapse supervene, the pulse becomes weak, the skin cold and clammy. Eventually, death occurs from exhaustion, usually in from 18 to 24 hours. If death does not occur from shock, bronchitis, congestion of the lungs, and pneumonia may follow. Inhalation of the fumes alone may be fatal. Treatment

should be directed to neutralising the acid as quickly as possible. Calcined magnesia is the best antidote, but if this is not available, sodium bicarbonate, chalk, whitening, ceiling plaster, etc., may be administered.

NITRATES FROM THE AIR. Nitrogen exists in the free state in the atmosphere, of which it forms four-fifths by bulk. Sir William Crookes, in an address before the British Association in 1898, showed that, as the number of inhabitants in the world increased, the area of wheat grown must be extended. As, however, there is a limit to the amount of arable land, he pointed out that by the use of nitrates as manures the quantity of wheat produced per acre could be doubled. He calculated that the nitrate beds would be exhausted within a measurable distance of time, and he directed attention to the possibility of obtaining nitrate by fixing the nitrogen of the air.

Before the Great War, nitrogen fixation was being carried out in Norway by the arc process, in Germany by the synthetic ammonia method or Haber process, and in other countries by the cyanamide process. During the war, the command of the seas being held by the Allies, Germany was unable to import nitrates, and was compelled to establish factories for the production of nitrates from the air. In the United Kingdom it was also realized that it was desirable to have an alternative source of nitrates, and so save tonnage. The nitrogen products committee was constituted in 1916, and researches were carried on to find out which method of fixing nitrogen was most suitable for home manufacture. Experimental plants for the cyanamide and synthetic ammonia processes were erected, works were organized, and the production of these chemicals was carried out on a very large scale.

Nitrification. Term applied to the formation of nitrates in soils and manures through the agencies of micro-organisms. Organic matter in the soil, derived from the remains of plants and animals and the excreta of the latter, contains abundant nitrogen, but not in a form suitable for plant food. The action of various microscopic plants (bacteria) effects nitrification, with formation of nitrates, provided moisture and some basic substance as carbonate of lime are present, that the temperature is sufficiently high, and that there is free circulation of air. The action takes place in three stages, effected by three different groups of bacteria: (1) Formation of ammo-

nia by *Bacillus mycoides* and other forms; (2) conversion of this into nitrites by *Nitrosomonas* and *Nitrococcus*; and (3) conversion of these into nitrates by *Nitrobacter*.

Nitrates are also formed by the fixation of the nitrogen in the air of the soil, as a result of the activity of still other kinds of bacteria. Some of these, such as *Azotobacter*, live in the soil itself, while others, *Pseudomonas radicola*, inhabit small swellings or nodules on the roots of leguminous plants. Such plants are therefore not only independent of nitrogenous manures, but actually add to the store of nitrogen in the soil, and are consequently of great use in rotation of crops. When a leguminous crop of a particular kind is grown on land for the first time, nodules will not form on the roots unless some soil from a field which has borne the crop is employed as a dressing, as this will contain the required bacteria. See Humogen.

Nitro-benzene ($C_6H_5NO_2$). Nitro compound manufactured from benzene. First prepared by Faraday in 1825 during the course of some experiments with benzene, it is a liquid with the odour of bitter almonds, and was manufactured in France under the name of "essence of myrbane" for use in scenting soap. Perkin devised a commercial process of making nitro-benzene by mixing in large cast-iron cylinders benzene, sulphuric acid, and sodium nitrate, but later processes employ a mixture of strong nitric acid and concentrated sulphuric acid and benzene. Nitro-benzene prepared from pure benzene is sold as light nitro-benzene, or "nitro-benzene for blue or black," on account of its use for preparing certain aniline dyes, and as heavy nitro-benzene, or "nitro-benzene for red," when made from a mixture of benzene and toluene. See Aniline; Dyes.

Nitro-cellulose. Product formed by the action of nitric acid on cotton, linen, or paper. The chief form of nitro-cellulose is gun-cotton (*q.v.*), which is formed with a strong solution of nitric acid and sulphuric acid, a weaker solution forming collodion. See Celluloid; Collodion; Cotton.

Nitro-compounds. In chemistry, hydrocarbon derivatives containing NO_2 groups. They are made by the action of nitric acid upon hydrocarbon, and the process applied to the benzene series is known as "nitration," examples of the products being nitro-benzene and nitro-toluene. Nitro-glycerin and nitro-cellulose are well-known explosives formed by

the action of nitric acid on glycerin and cellulose respectively. Trinitrophenol or picric acid, and trinitrotoluene are made by the action of nitric acid on phenol and toluene, and are also largely employed as explosives.

Nitrogen. One of the gaseous elements. Its chemical symbol is N; and atomic weight, 14.01. Discovered in 1772 by Rutherford, professor of botany in the university of Edinburgh. Lavoisier shortly afterwards proved the existence of nitrogen in the air, and called it "azote," a name by which it is still known in France. Chaplital first suggested the word nitrogen because he discovered it in nitre or saltpetre.

Nitrogen occurs in the free state in the atmosphere, of which it constitutes about four-fifths. The element also occurs in a combined state as saltpetre and Chile nitre, and as an essential constituent of animal and vegetable organisms. Animals have no power of directly absorbing the nitrogen of the atmosphere, but are dependent on the nitrogenous foodstuffs which they eat for their supply of this element. The nitrogenous materials are built up by plants which obtain their nitrogen from the soil, and the object of manuring the land with ammonium sulphate and Chile saltpetre is to replace the nitrogen extracted from it by plants. Natural sources of nitrates found in the soil are the combination of oxygen and nitrogen which takes place during thunderstorms. The quantity so supplied amounts each year to about 11 lb. of combined nitrogen per acre.

Nitrogen is prepared artificially by exhausting the oxygen from a confined space of air and so leaving impure nitrogen behind. This is conveniently done by exposing phosphorus in a bell-jar of air over a trough of water. Chemical methods are also employed, as heating together potassium nitrite and ammonium chloride, or passing chlorine into ammonia. When required in large quantities it is best prepared from the air, and is so made at the Odde works in Norway for the preparation of nitrolim. The specific gravity of pure nitrogen is 0.96737. Nitrogen is incombustible, and does not support combustion. It is also distinguished by its inactivity, although a form of "active" nitrogen, *i.e.* nitrogen in the atomic form, was discovered by Hon. R. J. Strutt in 1911.

The compounds of nitrogen and hydrogen are ammonia (NH_3), which can be prepared by the direct union of the elements; hydrazine or diamide (N_2H_4); and azoimide or

hydrazoic acid (N_3H). Nitrogen compounds with the haloid elements also occur, nitrogen chloride and iodide being very explosive.

There are five oxides of nitrogen: (1) Nitrogen monoxide, nitrous oxide or laughing gas (N_2O); (2) Nitrogen dioxide, nitric oxide or nitroxy (NO); (3) Nitrogen trioxide, or nitrous anhydride (N_2O_3); (4) Nitrogen tetroxide or peroxide (N_2O_4 or NO_2); (5) Nitrogen pentoxide or nitric anhydride (N_2O_5).

Nitrogen monoxide was discovered by Priestley in 1772, its exhilarating effects when inhaled being first observed by Davy. It was this effect which gave to it the name "laughing gas" (*q.v.*). Nitrous oxide is largely employed as an anaesthetic in dentistry and other surgical operations which only require a short period of unconsciousness. It is prepared by gently heating dried ammonium nitrate, which splits up into nitrous oxide and water. When required as an anaesthetic it needs further purification. It was liquefied by Faraday in 1823.

Nitrogen dioxide was first prepared by Van Helmont. It is best made by dissolving copper foil in nitric acid and collecting the gas in a pneumatic trough. Nitrogen trioxide is a red gas made by acting on starch with nitric acid. It forms with water the unstable nitrous acid, which, however, combined as nitrites, forms stable bodies. Nitrogen tetroxide is formed along with trioxide when nitric acid acts on white arsenic. See Air; Atmosphere; Hydrogen.

Nitrogen Products. Term used in chemistry to include various forms of combined nitrogen used in agriculture and for the manufacture of explosives. The various forms of combined nitrogen are conveniently classified as (a) nitrate nitrogen, in the form of Chile nitrate, potassium nitrate, ammonium nitrate, and calcium nitrate; (b) ammonia nitrogen, in the form of ammonia, ammonia sulphate, ammonium nitrate, and other ammonium salts; (c) nitric nitrogen, in the form of dilute and concentrated nitric acid; (d) cyanamide nitrogen, in the form of calcium cyanamide or nitrolim; (e) cyanide nitrogen, in the form of barium and sodium cyanide. The newer methods of obtaining nitrogen products are by the fixation of the nitrogen of the air and the synthesis of ammonia from hydrogen and nitrogen.

Nitroglycerin. Sensitive, highly explosive oil, prepared by nitrating glycerin. A nitric ester, the trinitrate of glycerol, its chemical

formula is $C_3H_5(O.NO_2)_3$. For many years after its discovery nitroglycerin found no commercial use except as a remedy for angina pectoris, on account of difficulties in its ignition and transport. Highly refined glycerin is required as the raw material, and this is injected into the mixed acid contained in a leaden nitrator. The nitrating acid consists of H_2SO_4 , 52 p.c.; HNO_3 , 47 p.c.; and H_2O , 1 p.c., eight parts of acid being used to one of glycerin.

Nitroglycerin is chiefly used as an ingredient of various blasting explosives, in safety explosives of the carbonite type, and in some propellants. See Ballistite; Blasting Gelatine; Cordite; Dynamite; Explosives; Gelignite; Nobel, Alfred; Safety Explosives, etc.

Nitronaphthalenes. Nitro derivatives of naphthalene first prepared by Laurent, in 1835, by nitrating naphthalene under suitable conditions. The most important is alpha-nitronaphthalene ($C_{10}H_7NO_2$), prepared on a small scale by dissolving naphthalene in glacial acetic acid, adding strong nitric acid, and heating for half an hour. On a commercial scale a mixture of sulphuric acid and nitric acid is employed. Nitronaphthalene is a solid which crystallises in long lustrous yellow needles, insoluble in water, but readily soluble in benzene, ether, carbon bisulphide, and hot alcohol. Nitronaphthalenes render nitroglycerin non-sensitive to concussion, and when present in small quantities have the important property of preventing dynamite from freezing.

Nitrous Ether OR ETHYL NITRITE. Liquid with a pleasant ethereal smell, made by distilling sodium nitrite with alcohol and dilute sulphuric acid. The alcoholic solution of ethyl nitrite known as sweet spirit of nitre is employed in medicine as a diaphoretic. It is still official in the British Pharmacopoeia as spiritus aetheris nitrosi.

Nitroxylenes. Substances prepared by nitrating xylene in the same way as benzene. Nitroxylenes are employed in the manufacture of xylienes, from which several aniline dyes are made. See Nitro-benzene.

Niue OR SAVAGE ISLAND. Pacific island, a dependency of New Zealand. It was named by its discoverer, Capt. Cook, 1774. It is 350 m. S.E. of Samoa, and consists of upheaved coral arranged in two terraces 90 and 220 ft. above mean sea level respectively. The native villages are all on the lower terrace. Banana and coconut are exported. Alofi is the chief village. The area is 100 sq. m. Pop. 3,700.

Nive. River of Spain and France. It rises in N. Spain, and flowing through the Pyrenees joins the Adour at Bayonne; its length is 45 m. In the Peninsular War there were engagements along this river, Dec. 10-13, 1813. On Soult's retreat into Bayonne, after his defeat on the Nive, Nov. 10, 1813, Wellington placed his forces on either side of the river Nive. Soult made a sortie, Dec. 10, and launched a heavy attack against a portion of the British forces under Gen. Hope, but was held at bay. Engagements took place on the following days until Dec. 13, when Soult hurled a force of 35,000 men against Hill's body of 17,000. Wellington's timely arrival saved Hill, and Soult withdrew with heavy losses. See Peninsular War.

Nivelle, Robert Grobois (1856-1924). French general. Born at Tulle, Oct. 15 1856, of English



R. G. Nivelle,
French general

descent on his mother's side, he joined the French army as a lieutenant of artillery, Oct. 1, 1878. He saw active service in Tunisia, Algeria, China, and again in Algeria, 1908-12, and on Dec. 25, 1911, was made a colonel and chief of the staff of the Algerian division.

On the outbreak of the Great War, Nivelle was in command of the 5th artillery regiment, and participated in the invasion of Alsace. In Sept., 1914, he fought in the battle of the Aisne, and, promoted brigadier-general, successively commanded the 27th infantry brigade and the 61st infantry division. He became general of division, with command of 3rd army corps, 1915.

Placed at the head of the second army, April 27, 1916, he played a great part in the battle of Verdun, being, as the result of his success, chosen to succeed Joffre; and on Dec. 12, 1916, was appointed commander-in-chief of the armies of the N. and N.E. In April, 1917, he conducted a powerful offensive in the Craonne-Reims area; but the losses were heavy, and it was decided that the offensive should be continued on a less extensive scale. From Dec., 1917-1919, Nivelle, who was commander-in-chief in N. Africa, retired in 1921. He died Mar. 23, 1924. See Pétain; Verdun; consult also Nivelle et Painlevé, G. Terrail, 1919; La Bataille de l'Aisne (Avril-Mai, 1917), Lt.-Col. Rousset, 1920.

Nivelles (Flemish, Nyvel). Town of Belgium, in the prov. of Brabant. It lies 18½ m. by rly. S. of Brussels, on the Thines, is a rly. junction, and has metal works, paper manufactures, tobacco and furniture industries. The Romanesque church of S. Gertrude was founded in the 11th century. Pop. 12,500.

Nivernais. Province of France, represented since 1792 by the dept. of Nièvre (*q.v.*) and part of Yonne. It lay contiguous with Berry, Orléanais, Burgundy, and Bourbonnais, and became a county in the late 9th century, Otto William of Burgundy being its first hereditary count. Held by the rulers of Flanders, 1280-1384, it passed to Burgundy and then to Cleves. A duchy from 1538, it was held by the Gonzague family from 1562 until bought by Mazarin, 1659, and given by him to his nephew, Jules Philippe Mancini. Its capital was Nevers. The Nivernais canal (109 m.) joins the rivers Loire and Yonne, passing from Decize to Auxerre, and was constructed 1784-1842.

Nivôse. Fourth month of the year as rearranged during the French Revolution. It began on Dec. 21 or 22, and the word means the month of snow.

Nixie, Nix, or Nick. Water sprite in the folklore of the peoples of N. Europe. The name occurs in various forms in German, Danish, Swedish, Icelandic, and English legend. It was often regarded as malignant, and its appearance pre-saged shipwreck and drowning. In its Anglo-Saxon form, *nicor*, it is mentioned in Beowulf, where several are slain by the hero. In the form Nick it has survived as one of the names used for the devil, Old Nick.

Nixon, Sir John Eccles (1857-1921). British soldier. Born Aug. 16, 1857, and educated at



Sir J. E. Nixon,
British soldier
Vandyk

Wellington College, he entered the K.O.S.B., but transferred to the Indian Staff Corps. He was in the Afghan War, 1879-80, was a staff officer with the Chitral Relief force and the Tochi field force, commanded a mounted brigade in the S. African War, 1901-2, and, having returned to India, was given a brigade. In 1906 he was promoted to be inspector-general of cavalry, and in 1908-12 commanded a division. Knighted in 1911, he

was appointed to the southern army in 1912, made a full general, 1914, and in April, 1915, took charge of the operations in Mesopotamia. Responsible for ordering the first advance to Kut, "with insufficient transport and equipment," he was censured by the commission that inquired into that campaign. He died Dec. 15, 1921. See Kut; Mesopotamia, Conquest of; Townshend, C. V. F.

Nixon, Lewis (b. 1861). American naval architect. Born at Leesburg, Virginia, April 7, 1861, he



Lewis Nixon,
American naval
architect

studied at the U.S. naval academy and the R.N. College, Greenwich, 1882-85. He designed the battleships Oregon, Indiana, and Massachusetts, 1890, and became superintendent of Cramp's shipyard, Philadelphia. In 1895 he set up as a shipbuilder at Elizabeth, N.J. Member of various

naval boards and commissions, he was in 1914 commissioner for public works at Richmond. In 1901-2 he succeeded Croker as head of Tammany Hall (*q.v.*).

Nizam (Arab, administration). Title of the sovereign of Hyderabad. The first holder was Asaf Jah (d. 1748), who was styled *Nizam-ul-Mulk*, i.e. the administrator of the kingdom. See Hyderabad.

Njördh or Njördhr. In Norse mythology, the god of the sea, and of seafaring and wealth. One of the race of the Vanir, he is husband of Skadhi and father of Freyr and Freyja. In the war with the Aesir he becomes a hostage. The German Hertha (*q.v.*) is his female counterpart.

Noah. O.T. patriarch. Son of Lamech and father of Shem, Ham, and Japheth, by divine command he made an ark in which he and his family

were preserved during the Deluge. The invention of wine is attributed to him (Gen. 6-9). See Ark; Deluge.

Noah, THE BOOK OF. One of the non-canonical O.T. Apocrypha or Pseudepigrapha (i.e. works written under an assumed name). It has not been preserved as an independent work, but fragments of it are incorporated in the Ethiopic Book of Enoch, and it is referred to in the Book of Jubilees (x, 13; xxi, 10). The work, which gives an account of the laws made by Noah for his children, would seem to have been written between 200 and 161 B.C.

Noailles. Name of a noble French family. Originating at the château of this name near Brive, Corrèze, the family gave its name to the town of Noailles, Oise, formerly called Longvillers. Antoine de Noailles (1504-62,) was chamberlain to Francis I, admiral of Guienne, and ambassador to England, 1533-36, and his brother François (1519-85), was bishop of Aix and ambassador to Venice, 1557, and to Constantinople, 1572. Anne Jules, duke of Noailles (1650-1708), a distinguished soldier, repressed



Noailles. Members of the French family. Left to right: Anne Jules, 1650-1708; Louis Antoine, 1651-1729; Adrien Maurice, 1678-1766

heretics in Languedoc, 1681, and was made marshal in 1693. Louis Antoine (1651-1729) was archbishop of Paris, 1695, and cardinal, 1700, and an opponent of the Quietists.

Adrien Maurice, 3rd duke (1678-1766), was an able general, finance president in 1715, and marshal of



Noah. Raphael's conception of Noah superintending the building of the Ark. From a ceiling painting in the Vatican, Rome

France, 1734, but was defeated at Dettingen, 1743. Louis, 4th duke (1713-93), was made marshal in 1775. His brother Philippe (1715-94), duke of Mouchy, an able soldier, also made marshal 1775, was guillotined with his wife. Jean François Paul, 5th duke (1739-1824), was a chemist, and his brother Emmanuel Marie Louis (1743-1822), a distinguished diplomat. Paul, 6th duke (1802-85), was an historian. Jules, 7th duke (1826-95), was an economist and publicist.

Nobel, ALFRED BERNHARD (1833-96). Swedish chemist. Born at Stockholm, Oct. 21, 1833, and educated in St.

Petersburg and in the U.S.A., he assisted his father, an inventor of considerable ability. From 1859-61 they devoted themselves to the study of explosives and perfected the manufacture of nitroglycerin. The improved explosive was called pyroglycerin, then glonoin oil, and later Nobel's blasting oil. The inconvenience of a liquid explosive led Nobel, in 1866, to mix the liquid with absorbent earth, forming dynamite. He settled in Paris in 1873, and shortly afterwards invented a still more powerful explosive, nitrogelatin or gelignite. He died Dec. 10, 1896. See Explosives.

Nobel Prize. Annual award from a fund established under the will of Alfred B. Nobel. By this he set aside the sum of £1,700,000 the interest on which was to be devoted to awarding five prizes each year to men and women eminent in (1) physics, (2) chemistry, (3) physiology or medicine, (4) literature of an idealistic tendency, and (5) the cause of peace. Each prize is of the value of £7,500. The Nobel Foundation is administered by a board of five members, with a president appointed by the king of Sweden. The awards in physics and chemistry are made by the Swedish academy of science, in medicine by the Stockholm faculty of medicine, in literature by the Swedish academy of literature, the peace award being made by a committee of five elected by the Norwegian storting. The prizes are open to all nationalities.

The first award was made in 1901, when the recipients were respectively: (1) W. Röntgen, (2) J. H. Van't Hoff, (3) E. von Behring, (4) Sully Prudhomme, (5) H. Dunant (Switzerland) and F. Passy

(France). In some years, including the Great War, no prize was awarded in certain of the sections, but from 1901 onwards one or more prizes has been awarded each year. During 1901-1920 there were 85 awards, though the recipients exceeded that total, as in some cases the prize was divided between two persons. Several women, including Madame Curie and Baroness Bertha von Suttner, have received a prize. British recipients include Lord Rayleigh, Sir William Ramsay, R. Kipling, and W. R. Cromer.

In addition there are Nobel Institutes, founded to further the aims of the foundation. Nobel's will provided for five, but only three have been built, two at Stockholm devoted to physics and chemistry and to literary works, with a library of 40,000 volumes, and the Norwegian Nobel Institute, with a library principally devoted to international law and peace. The headquarters of the Nobel Foundation are Nobelstiftelsen, Norrlandsgatan 6, Stockholm.

Nobel's Ballistic Test. Method of testing explosives whereby their relative strength may be determined. This test is a development of the éprouvette and was introduced by Alfred Nobel to determine the relative strength of industrial explosives. The test consists in determining the distance to which a heavy shot can be thrown from a mortar elevated to 45°, by a small charge of the explosive under test, and comparing the result with that given by a standard explosive. It has been superseded to a great extent by the ballistic pendulum (*q.v.*).

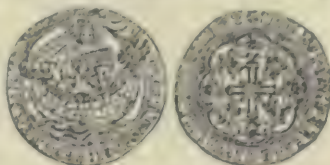
Nobile Officium (Lat., superior function). Term in Scots law for the power of the court of session in matters of equity to give a measure of relief not obtainable in courts bound by the strict letter of the law.

Nobility (Lat. *nobilis*, from *noscere*, to know). Literally, the state of being noble. In a narrower sense it suggests belonging to an old and noted family, and is used for the peers and their relatives as a body. See Peerage.

Noble. Term used for one who is regarded as of superior birth. It is of Roman origin, and is also found among Teutonic peoples, where the word adel, or ethel, may be translated noble. Some held the belief that the nobles were the descendants of the gods. In the class distinctions that were accentuated by the feudal system, the nobles formed a separate class in most European countries, becoming one of the estates of the realm where these arose. In England they

formed the House of Lords. To-day a noble simply means a peer, and includes sometimes the relatives of such. The phrase of noble birth means related to a peer. See Aristocracy; Baron; Duke; Lord; Peerage.

Noble. Obsolete English gold coin, first struck by Edward III. Its original value was 6s. 8d. It



Noble. Obverse and reverse of gold coin of Edward III. Actual size, 1 1/4 in. diameter

was also coined as 1/- and 1/2-noble pieces. See Angel.

Noble, Sir ANDREW (1832-1915). British physicist and

artillerist. Born at Greenock, Sept. 15, 1832, he entered the Royal Artillery 1849, became secretary to the committee on rifled cannon, 1858, to that on plates and guns, 1859, and a member of a number



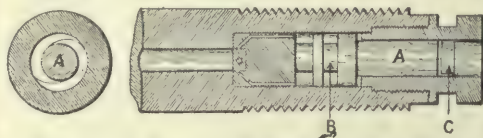
Sir Andrew Noble, British physicist

of other committees on explosives and ordnance. In 1860 he joined Sir W. G. Armstrong, and began a scientific investigation into the effects of various powders, inventing the chronoscope. His investigations had a revolutionary effect on the construction of big guns, and brought him many honours. In 1880 he received the gold medal of the Royal Society. Made a K.C.B. 1893 and a baronet in 1902, he died Oct. 22, 1915.

Noble Pressure Gauge. Instrument devised by Sir Andrew Noble for estimating the pressure developed in the chamber of a gun by the propellant charge. It is a modification of an earlier gauge invented by Major Rodman, of the U.S. army, in 1861, and the principle is employed in a variety of instruments for deducing different characteristics of explosives. A sectional illustration of the gauge shows the tubular steel body, which is threaded to screw into the wall of the gun barrel at the point or points where it is desired to estimate the pressure. A piston, A, is fitted at one end with a copper cup, C, which serves as a gas check, its opposite end being in contact with a copper cylinder, B, supported on

an anvil. When the gun is fired, the gases acting on the piston cause the copper cylinder to be crushed, and by measuring the reduction in length, which this treatment has caused, it is possible to estimate the pressure which existed in the gun. See Explosives.

Nocera Inferiore or **DE' PAGANI**. City of Italy, in the prov. of Salerno. It stands on the Sarno.



Noble Pressure Gauge. Longitudinal and cross sections. A. Piston. B. Copper cylinder. C. Gas check. See text

23 m. by rly. S.E. of Naples. The city has a ruined castle. Pop. 12,000.

Noctes Ambrosianae (Lat., Ambrose's nights). Title of a series of 70 symposia, which appeared in Blackwood's Magazine, 1822-35, 39 of them being by John Wilson (1785-1854), writing under the pseudonym of Christopher North. Purporting to be records of the conversations of the Ettrick Shepherd (James Hogg). De Quincey, and others round the punch bowl at Ambrose's tavern, Edinburgh, the Noctes Ambrosianae achieved great popularity. See Wilson, John.

Noctiluca (Lat. *nox*, night; *lucēre*, to shine). Genus of marine flagellate infusorians. They are heart-shaped, about 1-50th of an in. in diameter, and have a whip-like process by means of which they swim. They occur in vast swarms in the British seas and give rise to the phenomenon of phosphorescence.

Nocturn. In the R.C. breviary, office appointed to be recited during the night, forming part of the office of matins. The nocturns probably represent a division of the vigils, originally recited at midnight, into two offices on ordinary days and three on Sundays. They consist mainly of psalms and lessons. See Matins.

Nocturne (Ital. *notturno*). Musical composition, usually of a placid character. Some nocturnes are of the nature of serenades, others are rather music to accompany sleep scenes, such as Mendelssohn's *Notturmo* in the music to A Midsummer Night's Dream. John Field (1782-1837) probably first used the title for his short, romantic pianoforte pieces, and Chopin adopted it for his more famous nocturnes.

Noddy (*Anous stolidus*). Small tern found in the tropics. It is blackish in colour, with a light patch on the forehead, and distinguished by its graduated tail and

the shortness of the middle toe. It breeds in vast colonies off the coasts of Florida and S. America, the nest being a bracket of seaweed projecting from the rocks, one nest serving for hundreds of years.

Node. In astronomy, one of the two points in which the orbit of a planet intersects the plane of the ecliptic. The one at which the body passes to the N. of the ecliptic is termed the ascending, the other the descending node. The celestial longitude of the ascending node

is one of the astronomical elements which determine the orbit of a planet. The nodes of the planets, on account of planetary perturbations, move slowly round the ecliptic backwards, the period for Mercury, for example, being 166,000 years.

Node (Lat. *nodus*, a knot). That portion of the stem of a plant from which a leaf arises. The intervening bare length between two nodes is an internode. See Plant.

Noé, **AMÉDÉE CHARLES HENRI**, **VICOMTE DE** (1819-79). French caricaturist, generally known as Cham (*q.v.*).

Nogent-sur-Marne. Town of France, really a residential suburb of Paris. In the dept. of the Seine, it is 6 m. from the city proper on the E. side, being close to the Bois de Vincennes. It stands on a hill above the Marne, and railway lines, one being the Grande Ceinture, and tramways connect it with the capital. It has a Gothic church, and a monument to Watteau, who died here. The industries include chemical factories and pottery works. Pop. 14,000. Nogent-sur-Seine, 35 m. from Troyes, has a notable church, S. Laurent.

Nogi, **MARESUKE**, **COUNT** (1849-1912). Japanese soldier. Born of a Samurai family, he became a soldier, and first saw service in the civil war of 1877. He led a brigade

in the war against China, and in the Russo-Japanese War commanded the third army. He forced Port Arthur to surrender, and then made the flank march which was the decisive move in the battle of Mukden. With his wife he committed hara-kiri (*q.v.*) on the

death of the mikado, Sept. 13, 1912, having lost two sons before Port Arthur. From 1896-1900 Nogi was governor of Formosa. See Mukden; Port Arthur; Russo-Japanese War.

Noguchi, **YONE** (b. 1875). Japanese poet and critic. Born in Tsushima, Aichi, Japan, he studied at Keio University, Tokyo, and from 1893 lived in the U.S.A., first visiting England in 1903. He returned to Japan in 1904, and became professor of English literature at Keio University.



Yone Noguchi, Japanese poet

His works in English include *Seen and Unseen*, 1897; *From the Eastern Sea*, 1903; *The Summer Cloud*, 1906; *The Pilgrimage*, 1909; *Kamakura*, 1910; and *The Spirit of Japanese Art*, 1915. The Story of Yone Noguchi, 1914, is an autobiography. He has written several works on literary and travel subjects in Japanese, 1915-20.

Noisleville. Village of Lorraine, France, 5 m. E. of Metz. It was famous as the scene of a defeat of the French under Bazaine by the German army, Aug. 31 and Sept. 1, 1870. See Franco-Prussian War.

Nola. City of Italy, in the prov. of Caserta, Campania. Situated 21 m. E.N.E. of Naples, on the rly. to Baiano, it has a Gothic cathedral and remains of the 4th century church of S. Felix. Built on the site of a city founded probably by Ausonians or Etruscans, it was taken by Rome in 313 B.C. The emperor Augustus died here. Pop. 12,000.

Nollekens, **JOSEPH** (1737-1823). British sculptor. Born in Soho, Aug. 11, 1737, the son of Joseph Francis

Nollekens, a landscape painter, called Old Nollekens, he studied at Shipley's school, and under Scheemakers. After ten years in Rome, 1760-70, he settled in London, and was elected A.R.A. in 1771 and R.A. in 1772. His works included portrait busts of George III, Wellington, William Pitt, and many other celebrities. He died in London, April 23, 1823. His eccentric appearance and character are described in J. T. Smith's *Nollekens and his Times*, new ed. 1920.



Joseph Nollekens, British sculptor



Baron Nogi, Japanese soldier

Nolle prosequi (Lat., to be unwilling to prosecute). In English law, a term used where the attorney-general, prosecuting on behalf of the crown, discontinues the proceedings against one or all the accused. He does this by a writing under his signature. This document is handed to the clerk of the court, the procedure being called entering a nolle prosequi.

Noma. Severe form of gangrene affecting the mucous membrane of the mouth. *Noma putrida* affects the external genital organs. See Gangrene.

Nomad (Gr. *nomades*, pastoral rangers). Term denoting peoples who range from place to place in quest of sustenance. They may hunt afoot, as the Australian aborigines and the Bushmen, or on horseback, as the pampas Indians, while they may be quasi-industrial van-dwellers, as the gipsies. The term, however, denotes specifically pastoral tent-dwellers, whose economic life and culture were developed on Eurasian steppes and African grasslands along the margins of cultivable lands or deserts. See Beduins; Ethnology; Kirghiz.

No Man's Land. Term applied to a piece of unused or unowned land. A plot of waste land outside London Wall where executions took place was so designated in the 14th century. In the 18th century the term was used for a space used for storing ropes, blocks, etc., on board ship. In the Great War it was used for the terrain between the front-line trenches of the opposing forces. See Trench Warfare.

Nome (Gr. *nomos*, district). Territorial division in ancient Egypt. In the XIIth dynasty there were 20 in Lower Egypt and 22 in Upper Egypt and 13 in the Sudan. There were probably 100 under the new empire, and 60 in Roman times. Each had its civil capital, the residence of the hereditary nomarch (*heq*), and the seat of the patron deity. Nome is also, in modern Greece, the name for a province. See Egypt.

Nome. City of Alaska, U.S.A., on Seward Peninsula. It stands on the N. shore of Norton Sound, and gold was first worked here in 1899. The city grew from a settlement called Anvil City. Pop. 2,250.

Nomenclature (Lat. *nomen*, name; *calare*, to call). System of naming, for instance, the nomenclature of botany. See Name; Place Name.

Nominalism (Lat. *nomen*, name). A term in scholastic philosophy, opposed to realism. It was first introduced by Roscellinus at the end of the 11th century. Its upholders asserted that genera

and species, the universal notions, had no real existence, being merely sounds and words, products of abstraction, with nothing concrete corresponding to them; the individual alone has a real existence. Long before, Antisthenes the Cynic had declared that he could see a horse, but not horseness (the concept of horse). Realism won the day, but in the 14th century Occam again brought nominalism into favour. Abelard's conceptualism was a kind of middle term between nominalism and realism. See Philosophy; Realism.

Nominative (Lat. *nominare*, to name). In inflexional languages, the name given to the case indicating the subject or attribute. In the Indo-European group the ending of the nominative singular masculine and feminine was *-s* (*equus*, *vis*) or the simple stem (*pater*, *musa*); of the neuter *-m*, or the simple stem (*iugum*, *mare*); in the plural *-es* (*es*), *-oi* (*i*), *-ai* (*ae*) for masculine and feminine (*patres*, *ovae*, *vici* for *vici*, *musae* for *musai*). It is probable that the nominative suffix is in its origin pronominal. The nominative is known as *casus rectus*, the upright, independent case, which is in no way subordinate to the other elements of the sentence. See Grammar.

Non-combatant. Term for those who, in time of war, are not treated as fighting men, either by their own people or by the enemy. It thus includes all save the

soldiers in arms, but more strictly it is given to those who serve with the forces, but do not bear arms, e.g. chaplains and some of those employed in clerical and manual labour. Non-combatant members of armies are recognized by The Hague convention. During the Great War a non-combatant corps was established in Great Britain. It consisted of those who had a conscientious objection to fighting.

In the British army in the past surgeons and commissariat officers were regarded as non-combatants and bore honorary rank, but discontent with this inferiority caused them to desire the rank and status of combatant officers. When the Army Service Corps and Royal Army Medical Corps came into existence their officers were entitled to sit on courts-martial and to wear a sword. In the Indian army the non-combatants are called followers, as at one time they were in England, and in a division there are over 3,000 of them. See Conscientious Objector; Labour Corps; War.

Non-commissioned Officer. Soldier of any rank between private and warrant officer (*q.v.*). The three principal grades in the British army, each separately described, are lance-corporal, or bombardier in the artillery, corporal, and sergeant, wearing respectively one, two, and three inverted chevrons on the sleeve. Its abbreviation is N.C.O.

NONCONFORMITY IN GREAT BRITAIN

Rev. W. B. Selbie, M.A., Principal of Mansfield College, Oxford

With this article should be read the articles on the various Free Churches, e.g. Baptists; Congregationalism; Methodism; Society of Friends. See Anglicanism; Presbyterianism; also Bunyan; Milton; England; History; Passive Resistance; Puritans

Nonconformity, in the sense in which the word is almost always used, can only exist in countries where there is an established Church. It is a religious movement which exists outside and independent of such. There are consequently Nonconformists in England and Scotland, although not in Ireland, Wales, or the self-governing dominions, but in general speech the word is confined to those of England.

In the strict sense of the term Nonconformity came into being in England with the enforcement of the Act of Uniformity in 1562. But the spirit which then led to the setting up of Churches in separation from the Establishment had long made itself felt in the religious life of the country. It was akin to that which stirred up the Reformation in Europe. It showed itself by anticipation in John Wycliffe and

the Lollards. It was responsible for the Puritanism of Bishop Hooper and for the Presbyterianism of Cartwright, and it led to the separatist revolt against the Erastianism of Elizabeth and her advisers under Browne and Barrow.

The publication of the first Prayer Book of Edward VI, and the Act of Uniformity which required its use in all churches, may be said to have given definite shape to the spirit of Nonconformity. While intended mainly as a repudiation of Catholic practice, this measure had the unexpected effect of offending the Puritan party in the Church, and forcing them to a statement of their position which was practically identical with that of a free Church in a free State.

Under Elizabeth, whose policy, though largely responsible for the Anglican *via media*, was yet

thoroughly Erastian, two parties came into being: the Presbyterians, led by Cartwright, who rejected episcopacy but retained their belief in and love for the establishment; and the Separatists, represented by the Congregationalist Robert Browne. He dismissed the whole notion of a state-established Church, and advocated the setting up of independent and autonomous Churches, composed only of genuine Christians. For a long time Nonconformity was divided into these two sections, both of which were regarded by the law as dissenters from the Established Church and subjected to pains and penalties.

Policy of Laud

Meanwhile, in 1604, the Hampton Court Conference was held in the hope of securing an agreed ecclesiastical settlement. But the compromise then suggested by the Puritans was rejected, and the cleavage between the Established Church and both Puritans and Separatists became more pronounced. It was further accentuated by the policy of Archbishop Laud, who insisted on the divine right and apostolic succession of the episcopate, and so cut off the Anglican Church from communion with the Protestant Churches of the European continent. This policy, coinciding as it did with the growth of Arminian theology in the Establishment, drove together the various types of non-conforming Christians and gave them a common interest.

The religious intolerance of Charles I and his advisers was one of the chief sources of the Civil War. It was a real struggle for liberty and an uprising of Protestantism against prelacy in the Church, as well as against despotism in the state. The first period of the war saw the triumph of Presbyterianism through the Westminster Assembly and the Long Parliament, and the adoption of the Solemn League and Covenant in England. But the country, as a whole, was never really Presbyterian at heart, and the attempt to make it so came to nothing. The Independents stood out against it, and when the Commonwealth was set up under Cromwell they supported him in a much more comprehensive policy. He threw uniformity to the winds, and allowed Congregationalists, Presbyterians, Episcopalians, and even Baptists to remain in possession of parishes, so long as they were godly men.

The Restoration, though largely brought about by the Presbyterians in their fear of the republican tendencies of some of the Inde-

pendents, was an event of evil omen for Nonconformity, and indeed for religion generally. Charles II was profuse in promises, and undertook to maintain religious toleration and respect tender consciences. But the country was tired of the excessive strictures of the Puritans. Episcopacy soon regained its ascendancy, and the king himself had no mind to protect those who frowned on his pleasures and the licence of his court. The excesses of the Fifth Monarchy men gave a pretext for severe measures, and the old laws against Nonconformists were speedily revived and led to an outbreak of renewed persecution. The Savoy conference between Anglicans and Presbyterians accomplished nothing for unity, and the Parliament of 1661 emphasised the disabilities of Nonconformists.

In 1662 was passed the Act of Uniformity, which required of all ministers unfeigned assent and consent to all and everything contained and prescribed in and by "the book of common prayer." This Act was clearly intended to drive the Puritans out of the Church, and it succeeded in its aim. It resulted in the ejection from the Church of some 2,000 ministers, many of them the most learned and faithful of her servants. They were compelled to join the ranks of the Congregationalists and Baptists, who had maintained a precarious existence under persecution, and though by no means at one with them in opinion, to form a compact body of Nonconformity over against the Established Episcopal Church. Dissenting chapels were set up all over the country, but were not allowed to remain in peace. The Conventicle Act of 1664 made it a penal offence to attend their services, and the Five Mile Act prohibited ministers from exercising their vocation within five miles of any city or corporate town, and also from keeping schools.

Toleration Act of 1689

In spite of these hindrances, or rather perhaps because of them, Nonconformity continued to flourish. Meetings were held in secret, and the numbers of the recalcitrants grew steadily, so that in 1672 Charles had to admit that the policy of persecution had failed. Both he and James were inclined to a policy of indulgence, more from their desire to relieve R.C.'s than from any higher motives. But Nonconformists were by no means willing to accept favours at the hands of the Stuarts. The accession of William and Mary, and the passing of the Toleration Act in 1689, brought much more substantial

relief. This Act did not repeal any of the previous legislation against the Nonconformists, but simply did away with the penalties of disobedience. Under it 2,418 licences for meeting-houses were taken out in the next ten years.

During the whole of the 18th century the history of Nonconformity was a miserable struggle for existence, marked by repeated hostile measures, but also by a gradual escape from many of the disabilities under which it was suffering. The Occasional Conformity Act in 1711 effectively excluded Nonconformists from the public life of the country, and the Schism Act of 1714 from all opportunities of higher education. Both these measures, however, were repealed in 1719, and under the House of Hanover a more tolerant religious spirit came to prevail. Unfortunately this coincided with a spiritual decline in which the religious life of the whole country shared, and which did far more harm to Dissent than any persecution. It did not come to an end until the Evangelical revival at the close of the century. Though some Nonconformists looked askance at the revival at first, their Churches were ultimately swept into the movement, and the final separation of the Methodists from the Establishment led to a greater strengthening of the Nonconformist position.

Repeal of Penal Acts

The struggle for religious liberty was now entered upon with fresh energy, and the 19th century witnessed a gradual but sure process of emancipation. The Conventicle Act, the Five Mile Act, and the Test and Corporation Act were all repealed in the first quarter of the century; though, curiously enough, the original Act of Uniformity, the parent of them all, still remains on the Statute Book. At the same time began a definite campaign for securing complete religious liberty by the disestablishment of the Church. The first-fruits of this were seen in the disestablishment of the Church in Ireland in 1868, and this was followed in 1920 by the disestablishment of the Church in Wales. In 1871 came the measure which threw open the ancient seats of learning to Nonconformists. The founding of the Free Church Council in 1892 marked a further advance in the history of Nonconformity.

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Nones (Lat. *nonus*, ninth). The fifth, and in March, May, July, and Oct. the seventh day of the Roman month. See *Calendar*; *Calends*; *Canonical Hours*.

Nonet (Lat. *nonus*, ninth). Musical composition for nine performers. This combination is not common; examples are Spohr's Op. 31, Rheinberger's Op. 139, and Stanford's *Serenade*, Op. 95, all scored for stringed and wind instruments.

Non-ferrous. Containing no iron. The term came into prominence in 1918, owing to the passing of the Non-Ferrous Metal Industry Act, which, with the intention of breaking the monopoly of enemy countries in non-ferrous metals, made it illegal for unlicensed persons to carry on in the United Kingdom the business of extracting, smelting, refining, or dealing by way of wholesale trade in non-ferrous metals or their ores. Licences may only be granted to British subjects. The chief non-ferrous metals are copper, nickel, zinc, lead, gold, platinum, and silver. The licences granted remained in force during the continuance of the Great War, and for a period of five years afterwards.

Nonjurors. Name given to a number of clergymen of the Church of England who refused to take the oath of allegiance to William and Mary in 1689. Their contention was that they had already taken the oath to James II, and could not transfer their allegiance to another sovereign at the bidding of Parliament. In 1690 they were deprived of their livings.

The nonjurors included William Sancroft, archbishop of Canterbury, Thomas Ken, and several bishops, as well as the scholars William Sherlock and Jeremy Collier. Later they were joined by William Law. They included also a few laymen, Henry Dodwell and Henry Hyde, earl of Clarendon, among them. Altogether they numbered about 400. When deprived they held services of their own, and kept up an episcopal succession, but they gradually died out. See *Divine Right*; *Jacobites*; consult also *The Nonjurors*, J. H. Overton, 1902.

Nonneboschen (Nun's Wood). Wood of Belgium, in the prov. of W. Flanders. Situated $\frac{1}{2}$ m. N. of the Ypres-Menin road, about 3 m. E. of the former, and near Glen-corse Wood, it was prominent in the battles of Ypres, in the Great War. See *Ypres*, *Battles of*.

Nonpareil (*Cyanospiza ciris*). Cage bird, also known as the painted bunting. It is a summer migrant of the S. United States,

which winters in Central America. The hen bird is green above and yellow below, but two-year-old cocks have the head, neck, and upper part of the wings a bright blue, a yellow back shading into green behind, whilst the underparts and the rump are bright scarlet.

Nonpareil. Name of printing type. Half the size of pica, it is one size smaller than minion, and one size larger than pearl or agate, and is also called 6-point. Twelve lines make an inch. In French and German it is called *nonpareille*; Dutch, *nonpareil*; Italian, *nonpariglia*, Spanish, *nonparel*. The word is applied to corresponding

there in the time of Charles II, and called it a very noble house, but that sovereign gave it to the duchess of Cleveland, who sold it, and it was pulled down about 1680. Nothing of the palace remains.

On Old London Bridge was a remarkable structure called *Non-such* or *Nonesuch House*. It stood on the 7th and 8th arches from the Southwark end, was constructed entirely of wood, and is said to have been brought over from Holland piece by piece, and to have been put together by dovetailing and pegs without the use of a single metal nail. It projected beyond each side of the bridge, had



Nonsuch. The palace built by Henry VIII between Cheam and Ewell. From a print of 1582

thicknesses of rules, clumps, slugs, and reglet. See *Printing*.

Non possumus (Lat., we are not able). Term used, chiefly in legal circles, for a definite refusal to allow a thing to be done.

Non-rigid. Type of airship in which the shape of the envelope is entirely maintained by the pressure of the gas which it contains. See *Airship*.

Non sequitur (Lat., it does not follow). In logic, an inference which does not follow from the premises. Specifically, what is known as the fallacy of the consequent, where the relation between subject and predicate in an affirmative universal proposition is inverted. Honey is yellow; you see something yellow; therefore it must be honey. See *Logic*.

Nonsuch. Name given by Henry VIII to a palace which he built between Cheam and Ewell, in Surrey. Begun in 1538 and nearly completed in 1547, Mary sold it to the earl of Arundel, who finished it, but Elizabeth bought it back again, and in her time and that of the first three Stewarts it was a royal residence. Pepys was

a square tower at each corner crowned by small domes, and in each centre a carved gable. Built about 1580, it was taken down about 1757. See *London Bridge*.

Non-suit (Fr. *non suit*, he does not pursue). Term formerly used in English law. If a plaintiff, owing to some technicality of procedure, realized that he could not succeed at the coming trial of his case, he could elect to be non-suited. By this device he could recommence his action on paying all the costs, which he could not do after judgement given for the defendant. Non-suit is now obsolete.

Nootka. Group of American Indian tribes on the W. coast of Vancouver Island, British Columbia. Numbering in 1916 1,779, they form—with the Kwakiutl—the Wakashan stock, and are allied to the Makah of the adjacent Washington coast. Their rectangular timber houses are painted with fantastic human and animal figures; they use yew or crab-apple bows 3 ft. long; and in their ceremonial dances depict hunts, battles, and seal life.

Nootka Sound. Fiord on the W. coast of Vancouver Island, British Columbia. It is 6 m. wide, with a minimum depth of 250 ft. Three arms stretch inland, 7, 14, and 18 m. respectively. Nootka Island lies W. of the sound, with Esperanza Inlet N. of it. Nootka settlement is on the S. point.

This settlement was founded in the 18th century by some English merchants, who traded with China. In 1789-90, three of their ships were seized by some Spaniards. The British Government asked for redress, to which Spain replied by claiming Nootka for herself. Both countries and their allies prepared for war, but the French national assembly was against it, and negotiations were begun. On Oct. 28, 1790, a treaty was signed by which Spain surrendered all her claims.

Norbiton. District of Surrey, a residential suburb of London. It has a station on the L. & S.W. Rly., being 12 m. from London, and just outside Kingston-on-Thames. S. Peter's is the chief church.

Norbury. District of Surrey, and residential suburb of London. It is 7 m. from London, with a station on the L.B. & S.C. Rly., and is also connected with the metropolis by tramways. Here are the links of N. Surrey Golf Club.

There is a Norbury in Derbyshire, 7 m. from Uttoxeter, with a station on the N. Staffs. Rly. It has an old church, S. Mary's, partly of the 14th century, with monuments to the Fitzherberts, and is supposed to be the Norbourne of Adam Bede. Norbury Park is near Box Hill.

Norbury, EARL OF. Irish title borne since 1827 by the family of Graham-Toler. John Toler (1745-1831), a Tipperary man, was long M.P. for Tralee. He became solicitor-general and then attorney-general for Ireland, and was created Baron Norbury in 1800 on his appointment as chief justice of the common pleas. His wife was already Baroness Norwood in her own right. On his retirement in 1827 he was made an earl, and the titles are held by his descendants.

Nord. Dept. of France. The frontier prov. between France and Belgium, it runs S.E. from the English Channel to the Ardennes, and is divided into two parts connected by a wedge of land 5 m. wide. It has an area of 2,228 sq. m., and is watered by the Schelde, Scarpe, Lys, and Sambre. The chief cities and towns are Dunkirk, Hazebrouck, Lille, Douai, Valenciennes, Roubaix, and Cambrai. Its mineral products, before it was partly occupied and devastated by the Germans in the Great War, were coal, iron, lead, peat, and

bitumen. In the S. half took place some of the fiercest fighting of the Great War. The capital is Lille.

Nord, CANAL DU. Unfinished waterway of France, between Arleux and Noyon. Begun in 1903, to shorten the route for the traffic between Dunkirk and Paris, it was nearly completed when the Great War broke out in 1914. Its length is 54 m., its bottom width about 30 ft., and its depth $7\frac{1}{2}$ ft. It has 11 locks and a tunnel. It was very prominent in the later stages of the Great War. See Cambrai, Battles of; Hindenburg line.

Nordau, MAX SIMON (1849-1923). German-Hungarian author. A Jew by family, he was born at



Max Nordau,
German-Hungarian
author

Budapest, July 29, 1849, studied medicine, travelled widely, and having settled in Paris, practised as a physician. Nordau's novels and dramas were written to illustrate his social theories; among the novels being *The Drones Must Die*, 1898, Eng. trans. 1899, and among the dramas, *The Right to Love*, 1894, Eng. trans. 1895, and *Morganatic*, 1904, Eng. trans. 1904. He is better known by his analytical studies of contemporary society, *The Conventional Lies of Civilization*, 1884, Eng. trans. 1884; *Paradoxes*, 1885, Eng. trans. 1886; *The Malady of the Century*, 1887, Eng. trans. 1896; and *Degeneration*, 1892, Eng. trans. 1895. In the last especially he attempts to show that a great part of modern literature, art, and thought is neurotic and decadent. He died Jan. 22, 1923.

Nordenskiöld, NILS ADOLF ERIK, BARON (1832-1901). Finnish explorer. Born Nov. 18, 1832, and

educated at Helsingfors university, he studied mineralogy and mining. He moved to Stockholm in 1857, and in 1858 made valuable geological discoveries in Spitsbergen. For a time director of the royal museum at Stockholm, in 1861 and 1864 he made expeditions to Spitsbergen, while in 1868 he made a polar expedition, reaching 81° 42' N. He accomplished the N.E. passage in the *Vega* in 1878-80,

passing Bering Strait in 1879. He made a voyage to Greenland in 1883, and died Aug. 12, 1901. His works in English include *The Voyage of the Vega around Asia*, 1881; *The Second Swedish Expedition to Greenland*, 1885.

Nordenskiöld, NILS OTTO GUSTAF (b. 1869). Swedish explorer. Born at Sjögelö, Smaaland, and



N. O. Nordenskiöld,
Swedish explorer

educated at Upsala, he made a scientific exploration of the straits of Magellan and Patagonia in 1895-97, and of Alaska in 1898. He commanded the Swedish expedition (1901-4) which discovered Oscar II Land.

Nordenskiöld Sea. Section of the Arctic Ocean, N. of Siberia, between the Taimyr peninsula and the New Siberia islands. It receives the waters of the Lena, Olenek, Anabara, and Khatanga rivers, and was named after Nils Adolf Nordenskiöld, who navigated it in 1878.

Norderney. Island of Germany. It is about 8 m. long and about 1 m. wide, and is for government purposes part of the Prussian prov. of Hanover. Pop. 4,000. See Frisian Islands.

Norddeutsche Allgemeine Zeitung OR NORTH GERMAN UNIVERSAL GAZETTE. German daily newspaper. Founded in 1861 and published in Berlin, before the Great War it was an official subsidised organ of the German government. In the last year of the war it became the property of Reimar Hobbing, under whose direction it made the publication of general news a more prominent feature.

Norddeutscher Lloyd. German steamship company. Founded in 1857 by the amalgamation of several existing Bremen steamship lines, it ran its first vessel to America in 1858. Services were started to Central America and the W.

Indies, 1869; to S. America, 1875; Australia and the Far East, 1886. Shipyards and docks were built at Bremerhaven, and when the Great War broke out much of the world's traffic had fallen into the company's hands. The vessels that were not sunk were handed over to the Allies.



N. A. Nordenskiöld,
Finnish explorer



Norddeutscher
Lloyd flag;
white, with
blue device

Nordhausen. Town of Germany, in the Prussian prov. of Saxony. Standing on the Zorge, and built on the slopes of the Harz Mts., its notable buildings are the cathedral, the church of S. Blasius, and medieval town hall. It has distilleries, breweries, a trade in corn, pork, etc., and manufactures of chemicals and tobacco. It became Prussian in 1803. Pop. 33,000.

Nordica, LILLIAN NORTON (1859-1914). American vocalist. Born at Farmington, Maine, May 12, 1859, she studied in Boston, and in England and Italy, and in 1879 made her successful début in opera at Brescia. She sang at Covent Garden, 1887-93, and in the leading opera



Lillian Nordica,
American vocalist
Elliott & Fry

houses of New York and the European capitals. Her principal successes were as Marguerite in Faust and in Wagner rôles. She died when on tour, after being shipwrecked off Java, May 10, 1914.

Nordland. Fylke or co. of Norway. It stretches for over 300 m., and has a breadth of less than 60 m. It includes in the N. the Lofoten Islands, and the coast is fringed by islets, of which the chief group is the Vikten Islands in the

S. The chief town is Bodø, on the Salt Fiord. Its area is 14,917 sq. m. Pop. 173,000.

Nördlingen. Town of Bavaria, Germany. It stands on the Eger, 40 m. from Augsburg and 70 m. from Munich. The chief buildings are the Gothic church of S. George, restored in the 19th century, and the town hall. The town walls still stand. From about 1220 to 1803 Nördlingen was a free city of the empire. Pop. 8,700.

During the Thirty Years' War, two battles were fought at Nördlingen. In the first, Sept. 5 and 6, 1634, the Swedish army, with its German auxiliaries under Bernhard of Saxe-Weimar, was routed with heavy loss by the Imperialists. The second battle, Aug. 3, 1645, was between the French army of Condé and Turenne, and the imperial army under Franz von Mercy, who was killed in the battle. After severe fighting, Turenne carried the day, though it was but a barren success. See Thirty Years' War.

Nordstrand. Island of Germany. It lies off the W. coast of Schleswig-Holstein, W. of Husum, with which it has steamer connexion. Its area is 20 sq. m.

Nord-Trøndelag. Fylke or co. of Norway. It is centrally situated, with a small section of the Atlantic coast near the Vikten Islands. Trondhjem Fiord extends almost half-way across the co. from the S.W.; Folden and Nansen Fiords

are large indentations in the N.W. The rly. from Trondhjem reaches Steinkjaer. The chief town is Levanger. The area is 8,683 sq. m. Pop. 88,000.

Nore, THE. Sandbank in the Thames estuary, England. It is about 3 m. N.E. of Sheshness and 47 m. E. of London. At the E. extremity is the Nore lightship, anchored here since 1732. The Nore is generally regarded as marking the mouth of the Thames, and is an important anchorage. The naval mutiny at the Nore took place May 20 to June 13, 1797.

Nore. River of Ireland. Rising in the N. of co. Tipperary, it flows 70 m. S.E. through Queen's co. and co. Kilkenny to the Barrow, which it enters 2 m. above New Ross. The Nore is tidal to Inistioge, 10 m. from its mouth.

Norfolk. Eastern and maritime county of England, the fourth largest in the country. It has about



Norfolk arms

90 m. of coastline on the Wash and the North Sea, and an area of 2,054 sq. m. The surface in the interior is undulating or flat, the latter in the W., where the fen district enters the county, while along much of the coast it is quite low, and suffers in parts from the encroachments of



Norfolk. Map of the maritime county of East Anglia, noted for agricultural produce and cattle-raising

the sea, as it does in the few places where cliffs fringe the shore. Along the Wash, however, some land has been reclaimed. The chief river is the Yare, with its tributaries, Wensum, Bure, and Waveney, which divides Norfolk from Suffolk. The Great Ouse and its tributaries also water the county, which contains the shallow lakes known as the Broads.

Norfolk is a noted agricultural county. Wheat, barley, and oats are largely grown; cattle and sheep are reared; and some land is given up to fruit. Fishing is an important industry, while oil shales are worked near King's Lynn. It is served by the G.E. Rly. and by a line maintained jointly by the Mid. and G.N. Rlys. Norwich is the county town and the largest place. Other corporate towns are Yarmouth, King's Lynn, and Thetford, while there are a number of small towns, among them East Dereham, North Walsham, Downham Market, and Wymondham. Cromer and Hunstanton are watering-places. The county, which is mainly in the diocese of Norwich, sends five members to Parliament.

Norfolk was part of the kingdom of E. Anglia, and soon after the Norman Conquest became one of the richest parts of England. This was due mainly to its sheep farming and the county's wealth was increased when in the 12th century Flemings introduced the worsted manufacture. Woollens were also manufactured, and Norwich became one of the three greatest cities of the kingdom. There are ruins of castles at Castle Acre and Castle Rising. In the county are Sandringham, Houghton, Holkham, Paston, and Nelson's birthplace, Burnham Thorpe.

LITERARY ASSOCIATIONS. The Babes in the Wood are supposed to have been left to die in Wayland Wood, between Watton and Wymondham; and The Bailiff's Daughter of Islington belonged to the hamlet of that name near King's Lynn. The Paston Letters, with their intimate revelations of 15th century life, may be recalled at Caister, near Yarmouth, and elsewhere. Charles Dickens placed notable scenes of David Copperfield at Yarmouth. George Borrow wrote of Norwich and other Norfolk places in Lavengro. Augustus Jessopp in two or three volumes described the county between E. Dereham and Swaffham as Arcady. See Broads.

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Byways in East Anglia, W. A. Dutt, 1901; Victoria History, Norfolk, ed. H. A. Doubleday and W. Page, 1901.

Norfolk. City of Virginia, U.S.A., in Norfolk co. It stands on Elizabeth river, an arm of Chesapeake Bay, 68 m. S.E. of Richmond, and is served by the Chesapeake and Ohio and other rlys., and by Transatlantic and other steamship lines. Transport facilities are also provided by two canals. An important port and the second largest city of the state, Norfolk has a spacious harbour. Peanuts and coal are shipped, and lumber, grain, fruit, oysters, and cotton are exported. The manufacturing industries include fertilisers, lumber products, cotton, silk, and knitted goods, carriages, wagons, oil, tobacco, and cigars. Norfolk was laid out in 1682, incorporated in 1736, and became a city in 1845. Pop. 116,000.

Norfolk, EARL AND DUKE OF. English titles, the latter being the senior dukedom in the peerage. After the Conquest of 1066 the earldom of Norfolk was held by several nobles, including members of the family of Bigod. It passed through female descent from the Bigods to the Mowbrays. In 1397 Thomas Mowbray was created duke of Norfolk, and except for a short period his descendants held the title until 1476, when John, the 4th duke, died without sons.

John Mowbray's daughter Anne married Richard, younger son of Edward IV, and for two years that young prince was duke of Norfolk. In 1483 John Howard was created duke of Norfolk by Richard III, and the present title dates from that year. The Howards were descended through a female from Thomas Mowbray, the 1st duke. In 1572 the 4th duke was attainted and the title lapsed until 1660, when Thomas Howard, earl of Arundel, a descendant of the attainted duke, was restored to the dukedom by Parliament. Many of the earlier earls and dukes of Norfolk had filled the office of earl marshal, and in 1672 this was made hereditary in the family. The principal seat of the family is Arundel Castle, and the eldest son of the duke bears the courtesy title of earl of Arundel or earl of Surrey. See Arundel; Howard.

Norfolk, JOHN HOWARD, 1ST DUKE OF (c. 1430-85). English soldier. A kinsman of the Mowbray family, dukes of Norfolk, he fought in the Guienne campaign, 1453, and became knight of the shire for Norfolk, and sheriff under Edward IV, 1461. He fought against the Lancastrians, and though created Baron Howard by

Henry VI, 1470, he remained faithful to Edward, whom he accompanied to France, 1475, and acted as diplomatic representative, 1477-80. He was made duke of Norfolk and earl marshal by Richard III, 1483, and was killed at the battle of Bosworth. His title was attainted by Henry VII, but a reversal was secured by his son Thomas, earl of Surrey, who became 2nd duke in 1514.



John Howard,
1st Duke of Norfolk

Norfolk, THOMAS HOWARD, 3RD DUKE OF (1473-1554). English soldier. Son of Thomas Howard, 2nd duke, he fought at Flodden, 1513, and became earl of Surrey on his father's restoration to the dukedom in 1514. He was lord-lieutenant of Ireland, 1520-21, raided the



Thomas Howard,
3rd Duke of Norfolk
After Holbein

French coast, became lord treasurer, 1522, and as warden of the marches raised the Scots' siege of Wark Castle, 1523. He cruelly suppressed the Pilgrimage of Grace (q.v.), 1537-38, and commanded the English army sent against the Scots in 1542. His influence, however, waned before that of Hertford, and he was imprisoned, 1546-53. Released by Mary, his attainer was reversed in 1553, and he died at Kenninghall, Norfolk, Aug. 25, 1554.

Norfolk, THOMAS HOWARD, 4TH DUKE OF (1536-72). English politician. Born March 10, 1536, he was taught by John Foxe, and succeeded to the dukedom in 1554. He represented Elizabeth in the Scottish negotiations, 1559-60 and in 1568. He planned, however, a marriage with Mary Queen of Scots, and was imprisoned by Elizabeth, 1569-70. Released on a promise of allegiance and renunciation of the marriage scheme, he was drawn into the Ridolfi Plot, arrested in Oct., 1571, and, denying that he was a Roman Catholic, was executed as a traitor, Jan. 2, 1572.



Thomas Howard,
4th Duke of Norfolk
After Holbein

Norfolk, HENRY FITZALAN-HOWARD, 15th DUKE OF (1847-1917). British politician. Born

Dec. 27, 1847, son of Henry Granville, 14th duke (1815-60), he was educated at the Oratory School, Edgbaston. He was envoy for Queen Victoria at the Jubilee of Leo XIII, 1887, was post-master-general, 1895-1900, and went with the Imperial Yeomanry to S. Africa, 1900. He was elected mayor of Sheffield in 1895, was first chancellor of Sheffield University, and sat on the L.C.C., 1892-95. Throughout his life active in all matters pertaining to the R.C. Church in Great Britain, he took part as earl marshal in the coronation ceremonies of Edward VII and George V, was lord-lieutenant of Sussex from 1905, and died Feb. 11, 1917. His eldest son, an invalid, had died in 1902, and he was succeeded by his son by a second marriage, Bernard Marmaduke (b. 1908). See Earl Marshal.



Henry Fitzalan-Howard, 15th Duke of Norfolk
Russell

Norfolk Island. Islet in the Pacific within the territory of the Commonwealth of Australia. It is 5 m. long, 3 m. wide, was discovered by Capt. Cook in 1774, and is 400 m. from New Zealand and 930 m. from Sydney. The climate is mild, the temperature averaging 68° F. with a range of 35° F.; the rainfall is 55 ins. annually. Bananas, lemons, guavas, pineapples, and passion fruit are grown, and whaling is carried on. In 1856 the descendants of the mutineers of the Bounty were removed here from Pitcairn Island, to which, however, some returned two years later. The island was handed over to Australia in 1914. Pop. 1,000.

Norfolk Regiment. Regiment of the British army. Formerly the 9th Foot, it was raised in 1685 to



Norfolk Regiment badge

assist in crushing Monmouth's rebellion, and first saw active service in Holland in 1701. In 1704 it went to Portugal, and its services at Almanza, 1707, earned for it the figure of Britannia as a regimental badge. The capture of Belle-Île, 1761, and other West Indian islands in 1794, further enhanced its record. It was fighting throughout the Peninsular War,

and later in the Afghan War, 1842, Sikh Wars, Crimean War, Afghan War, 1879-80, and Burmese War, 1889. In the South African War it formed part of the 7th division.

In the Great War the regiment had, in addition to its regular battalions, territorial and service battalions, also an allied Australian unit. The 1st battalion was part of the expeditionary force, and fought at Mons and in all the leading battles of 1914. The 2nd battalion was in Gallipoli in 1915; the 5th battalion (territorial) was also in Gallipoli. The 2nd went to Mesopotamia, where it took part in Townshend's advance, fought at Ctesiphon, and was in the siege of Kut, 1916. The 8th battalion was at the battle of the Somme in 1916, and in 1917 took part in the third battle of Ypres. In 1918 the 7th battalion fought in the critical battles of the Germans' spring offensive, and men of the Norfolk regiment shared in the final British victories. As a war memorial five pairs of cottages for disabled soldiers were erected near the Britannia barracks, Mousehold Heath, Norwich. The regimental depot is at Norwich.

Norham. Village of Northumberland. It stands on the Tweed, 6 m. from Berwick-on-Tweed, with



Norham, Northumberland. Keep of the ruined castle, seen through Marmion's Gateway

a station on the N.E. Rly. It is famous for its castle, one of the strongest of the defences of the English border, and mentioned in Marmion. It was built by a bishop of Durham in the 12th century, and was long held by the bishops. It is now a ruin, the chief feature being the Norman keep. The village has a parish church dating from Norman times. Herein in 1290 Edward I heard the case for the throne of Scotland. The district around is known as Northamshire, and until 1844 was a detached part of the county of Durham. Pop. 800.

Noric Alps (anc. *Alpes Norice*). Section of the E. Alps stretching N.E. from the Rhaetian Alps (q.v.) between the valleys of the Mur and the Drave. It was named

after the Roman prov. of Noricum. The highest peak is the Eisenhut, alt. 8,000 ft. See Alps.

Noricum. Prov. of the Roman empire lying S. of the Danube, and corresponding roughly to the modern Carinthia, Styria, and parts of Austria and Bavaria. Its Celtic inhabitants were conquered by the Romans in 16 a.c.

Normal School OR COLLEGE. Institution for the training of teachers for the work of education. The term, which is a translation of the French *école normale*, is more commonly used in the U.S.A. than in Great Britain, where the usual name for such institutions is training college. See Education; Training College.

Norman. Name given to the people of Normandy and their descendants in countries which were conquered by them. The word Norman, Fr. *Normand*, is identical with Northman, but is generally restricted to the mixed race which arose after the conversion of the heathen settlers and their adoption of French culture. This race displayed extraordinary energy and love of adventure, military, legal, and organizing powers, as well as adaptability. Itself the product of one of the latest of the great European migrations, it spread

Latin order and discipline through many regions, posed as the champion of the papacy, and initiated the movement which culminated in the Crusades. The conquest of England was followed by the permeation of the Scottish Lowlands by Norman chivalry, exemplified in the

Bruces and Baliols, while S. Wales and the Irish Pale were conquered.

About 1017 Norman adventurers intervened in the struggles in S. Italy between Greeks and Moslems, and by craft and force established a dominion under Robert Guiscard, who became duke of Apulia and Calabria in 1059. His nine brothers aided in the conquest, Roger I overthrowing the Arabs of Sicily, 1060-91. Roger II, crowned king of Sicily in 1130, united the Norman possessions on the mainland, including Naples, with his own, and conquered Corfu and Mahedia in N. Africa. William II conquered Epirus and sacked Salonica, 1185. The Norman dynasty in Sicily died out in 1194.

Norman Architecture. Name applied to a style of building in England and Normandy during the 11th and 12th centuries. It is said to have been introduced into England by Edward the Confessor, who built the choir and transepts of the old Abbey of Westminster, but was not fully developed until after the Conquest. Historically, it is a local variety of Romanesque.

The main characteristics of Norman, as of Romanesque, architecture are the round arch and the plain round or rectangular column. Little is made of the base of a column; the bell capital (*q.v.*) is much the same as the Saxon in design and workmanship; vaults are of the barrel variety, roofs generally of wood, and masonry thick-jointed and rough. In the reigns of William I and William II the principal building was the castle.

In the 12th century the style grew more ornamental. Heavy barrel vaults were groined; the angles of rectangular piers softened by recessed columns; doorways became more highly decorated, and enrichment more general in the direction of mouldings. The employment of the square and hatched billet, chevron, scollop, and other typical Norman ornaments was extended. Buttresses, at first wide and of slight projection, became much bolder. One of the best examples of a 12th century church in London is S. Bartholomew's, Smithfield. *See Arch; Architecture; Castle; Door; Romanesque;* consult also *Norman Architecture*, E. G. Browne, 1907.

Norman, Sir Henry (b. 1858). British journalist and politician. Born at Leicester, Sept. 19, 1858, he was educated in France and at Harvard and Leipzig. He was on the staff of *The Pall Mall Gazette* and *The Daily Chronicle*, and founded and edited *The World's Work* in 1902.

Liberal M.P. for S. Wolverhampton, 1900-10, when he was returned for Blackburn, he was assistant postmaster-general, 1910; and chairman of several select committees. He travelled extensively, and wrote *The Real Japan*, 1892; *The Peoples and Politics of the Far East*, 1895; *All the Russias*, 1902; and other works. He was made a baronet in 1915.

Normanby. District of Yorkshire (N.R.), England. It is 4 m. from Middlesbrough. It is in the

urban district of Eston. Another Normanby, also in the North Riding, is the village, 5 m. from Pickering, from which the family of Phipps takes its title.

Normanby, MARQUESS OF. British title borne since 1838 by the family of Phipps. In 1767, Constantine Phipps, a grandson of Sir Constantine Phipps (1656-1723), lord chancellor of Ireland, was created an Irish baron, and in 1790 his son, Constantine John, was made an English one. On his death in 1792 the Irish title of Baron Mulgrave passed to his brother Henry (1755-1831), who was secretary of state for foreign affairs, 1805, and in 1807 became first lord of the admiralty, in 1812 being made earl of Mulgrave. His son, Constantine Henry (1797-1863), the 2nd earl, was made marquess of Normanby in 1838. George, the 2nd marquess (1819-90), was a Liberal M.P.



Normanby, CONSTANTINE HENRY Phipps, 1st MARQUESS OF (1797-1863). British politician. The son of Henry Phipps, 1st earl of Mulgrave, he was born May 15, 1797. Educated at Harrow and Trinity College, Cambridge, he entered Parliament in 1818. Earl of Mulgrave in 1831, in 1832 he became governor of Jamaica. In 1834 he was appointed lord privy seal, and from 1835-39



1st Marquess of Normanby, British politician
After H. P. Briggs, R.A.

was lord-lieutenant of Ireland. From 1839-41 he was home secretary under Lord Melbourne; from 1846-52 ambassador in Paris; and from 1854-58 at Florence. He died July 28, 1863. He wrote *A Year of Revolution* (1848), 1857.

Norman Conquest. Name given to the conquest of England by William I in 1066 and the

succeeding years. It began with his victory at Hastings, and may be said to have ended with the march to Chester in 1070. Formerly regarded as introducing a completely new system into England, the present view is that Norman influence, although considerable, was far from destroying all traces of English law and customs. *See Armour;*



and in turn governor of Nova Scotia, Queensland, New Zealand, and Victoria. The eldest son is called the earl of Mulgrave, from the family seat near Whitby.



Normandy. Examples of native dress. 1. Havre fisherman. 2. Couple in gala costume. 3 and 4. Front and back views of the Butterfly head-dress, as worn at Avranches



Normandy. Map of the old French province, once an apnage of the British crown

Bayeux Tapestry, colour plate; England: History; Feudalism; William I; consult also The Norman Conquest, E. A. Freeman, 1867-79.

Normandy. Old province of France. It was one of the largest of those into which France was divided before the Revolution, and takes its name from the Normans or Northmen. The name is still used to describe the district. Normandy lies along the English Channel between Picardy and Brittany, and on the S. touches Maine, and in the S.E. the Ile de France. Its capital is Rouen, while Caen, Bayeux, Lisieux, and Evreux are interesting Norman towns. For many years the Channel Islands belonged to the duchy, and it was owing to this connexion that they became English.

After having been included in the Roman and the Frankish empires, Normandy was ravaged by the Danes or Northmen, who found an easy way for their boats along the Seine. Some of them settled on its banks, and in 912 King Charles the Simple made a treaty with their leader, Rollo, to whom he gave some land around Rouen. Thus Rollo founded the duchy of Normandy, which grew in size under his successors. They

assimilated the French language and culture, and were often at war with their neighbours the counts of Anjou. William the Conqueror, who became duke in 1035, added Maine to his possessions. In 1066 he was crowned king of England, and when he died in 1087 he left Normandy to his eldest son Robert, thus separating it from England. In 1106, however, Robert was beaten at Tinchebrai and captured by his younger brother, Henry I, and the two countries were again united. After Henry's death in 1135, his grandson, Henry II, had to fight for Normandy as for England, but when he became king in 1154, he was already duke.

Normandy and England

Normandy, although ruled by the English king, had the king of France as its overlord, and the relationship naturally led to trouble. Both Louis VII and Philip Augustus coveted the great possessions acquired by Henry II, but were unable to take any of them from him, although they helped his sons to harass his life. The warfare continued during the reign of Richard I, and came to a climax in that of John. In 1202 Philip Augustus invaded Normandy, and when Rouen sur-

rendered to him in 1204, it was all in his possession. The duchy was formally surrendered by Henry III (1259).

After John had been deprived of Normandy the land was without a duke, but in 1329 Philip VI appointed his son John to that office. During the Hundred Years' War the duchy was a battleground, and in 1359, after the English successes, the French king promised to cede it. This arrangement fell through, and after Agincourt the English overran it and established an administration. But the Normans steadily resisted, and gradually it was recovered by France.

For many years Normandy had its own assembly of estates, and there was a parlement at Rouen from 1499 until the Revolution. Before that time, however, the land was completely at one with the rest of France. In 1791 it was divided into departments. See Channel Islands; Distaff; Northmen; consult also History of Normandy and of England, F. Palgrave, 1851-64; The Norman Conquest, E. A. Freeman, 1867-79.

Norman-French. Dialect of Old French spoken in Normandy and England. The Scandinavian settlers in Normandy adopted the

French tongue in the 10th century, and the dialect which thus arose contained many words of Danish origin, and many phonetic peculiarities. It played an important part in the development of Old French literature, and was the dialect of many of the trouvères, including, perhaps, the author of the original Song of Roland. The metrical chronicles of Wace are 12th century monuments of Norman-French. Modern Norman speech preserves traces of the old dialect, especially in the Channel Islands, where an archaic form is used on ceremonial occasions.

Anglo-Norman is the name of the dialect spoken by the dominant class in England for about two centuries after the Conquest. Spoken by a small and scattered minority, it is remarkable for its irregularity and its tendency to simplification. Its influence on English was much less than that of the Parisian-French which became current in official and noble circles in Henry III's reign, when Anglo-Norman was dying out.

Normanton. Urban dist. and market town of Yorkshire (W.R.), England. It stands on the Calder,



Normanton. Seal of urban district council

10 m. from Leeds, and is an important rly. junction, the Mid. Rly. uniting with the N.E. and L. & Y. lines. The chief building is the church of All Saints, partly Perpendicular. There is a 16th century grammar school. The industries include ironworks, coal mines, and the making of chemicals. Market day, Sat. Pop. 15,000.

South Normanton is a village near Alfreton, in Derbyshire, also a coal-mining centre. Pop. 5,200. Another Normanton is near Derby, and there are places of this name in Rutland and Lincolnshire. Normanton-on-Soar and Normanton-on-Trent are villages in Nottinghamshire.

Normanton. Township of Queensland, Australia. It is 23 m. from the Gulf of Carpentaria, 1,352 m. from Brisbane by sea, the port of mining and pastoral areas in the Flinders district. Pop. 500.

Norn. In Scandinavian mythology, the name of the three goddesses of fate. Of the race of the giants, they ended the golden age of the gods. They cast lots over every infant and lay gifts in his cradle. One is malignant, the others are beneficent. They are akin to the Valkyries, the fairies, and the classical Parcae. Late literary

myths represent them as Past, Present, and Future, and as daily watering the root of the world-ash Yggdrasil from the well of Weird or Fate.

Norrbotten. Län or co. of Sweden. It is the largest and northernmost co., being bordered by Finland, Norway, and the Gulf of Bothnia, and includes part of Lapland. The extensive forests and the iron mines of Gellivare are exploited, the numerous rivers and lakes being used by the lumberers. Its area is 40,731 sq. m. Pop. 177,000.

Norris, Sir John (c. 1547-97). English soldier. Younger son of Henry, Lord Norris, and known as



Sir John Norris, English soldier
After Zucchero

Black Norris, he served with the Huguenots in France, under Essex in Ireland, and in the Netherlands against Spain. After being lord president of Munster, he returned to the Netherlands in 1585 at the head of an English army, was knighted by Leicester for relieving Grave in 1586, and fought at Zutphen. He was marshal of the camp at Tilbury in 1588, ambassador to the Netherlands, and leader with Drake of an expedition to Spain. He died at Mallow, July 3, 1597.

Norris's father, Henry Norris, belonged to an old Berkshire family prominent at court in Tudor times. In 1572 he was made Baron Norris, and he died in June, 1601. His sons were all famous as soldiers, and their figures are on the Norris monument in S. Andrew's Chapel, Westminster Abbey. The barony is held by the earl of Abingdon.

Norris, William Edward (b. 1847). British novelist. Born Nov. 18, 1847, he was educated at Eton, and called to the bar in 1874. He wrote many novels, several widely popular for their simple style of narrative and clever analysis of character. They include *Made-moiselle de Mersac*, 1880; *The Rogue*, 1888; *The Dancer in Yellow*, 1896; *Giles Ingilby*, 1899; *Not Guilty*, 1910; and *Proud Peter*, 1916.

Norristown. Borough of Pennsylvania, U.S.A., the co. seat of Montgomery co. It stands on the

Schuylkill, 18 m. W.N.W. of Philadelphia, and is served by the Pennsylvania and other rlys., and by the Schuylkill canal. Norristown dates from 1785, and was incorporated in 1812. Pop. 32,300.

Norrköping. Town of Sweden, in the län or co. of Linköping. It stands at the head of the Bravik Fiord, an inlet of the Baltic, and is a junction 113 m. by rly. S.W. of Stockholm, with which it is also connected by steamer. It has a good harbour and shipbuilding yards, and trades in timber, granite, iron, and grain. The river Motala affords power for numerous factories. Norrköping was founded in 1384. Pop. 57,000.

Norroy King of Arms. Officer of the Heralds' College, England. He was first heard of in the reign of Edward II, and, as the title indicates, had jurisdiction over England N. of the Trent. See College of Arms; Heraldry.

Norse. Adjective properly signifying Norwegian, the native form being Norsk, i.e. Nord-isk. It is applied usually to the older period of Norwegian history, including the age of the great migrations, often in a sense which includes the whole Scandinavian race. The Norse language, the old language of Norway, where it is now virtually extinct, was carried to Iceland, Greenland, the Orkneys, Shetlands, Hebrides, Man, and parts of the Scottish mainland, especially Caithness. It was ousted from Norway by Danish, and from Scotland by Gaelic and English, though it lingered in the Orkneys and Shetlands until the 18th century.

Old Norse, one of the North Germanic group of languages, is the name given to the form of the language current before the 15th century, another name being Old Icelandic. While Iceland was the chief seat of Old Norse literature, some of the extant works were written in Norway, Greenland, and perhaps in the Hebrides. See Icelandic; Northmen; Norway.

Norseman. Township of Western Australia. It is the railhead of a branch from Coolgardie, from which it is 100 m. distant. It is the chief place on the Dundas goldfield. Pop. 1,100.

North. One of the cardinal points, one end of the earth's axis. The central point of the Arctic basin is the north terrestrial pole, directly above which the north celestial pole is marked approximately by the pole star. The north magnetic pole to which compasses point is more than 800 m. to the S. of the N. pole. As a noun the word is used in the phrase The Frozen North to signify the Arctic regions.



W. E. Norris, British novelist
Elliott & Fry

North, BARON. English title borne since 1554 by the family of North. Sir Edward North, a prominent lawyer and courtier in the time of Henry VIII, was made a baron in 1554. His son Roger, the 2nd baron, was ambassador to France. His descendant, Charles, the 5th baron, was made Baron Grey; but this title expired with his son, the 6th baron, in 1734. The 7th baron was a cousin, who was already Baron Guilford, and in 1752 was made earl of Guilford. The two titles were held together until 1802, when the 3rd earl died. The barony then fell into abeyance, remaining so until 1841. It was then granted to Susan, daughter of the earl of Guilford. She and her husband, J. S. Doyle, took the name of North, and in 1884 their son William became the 11th baron. The family seat is Wroxton Park, Banbury. See Guilford, Earl of.

North, FREDERICK NORTH, LORD (1732-92). English statesman. Born April 13, 1732, son of Francis, 1st earl of Guilford,



Frederick, Lord North,
English statesman
After Dance

whom he succeeded in 1790, he was educated at Eton and Trinity College, Oxford. Entering Parliament, 1754, he was chancellor of the exchequer, 1767, and first lord of the treasury in 1770, and was fiercely attacked for his support of George III. Resigning in 1782, he formed a coalition with C. J. Fox, and held office again April-Dec., 1783. He died in London, August 5, 1792. See Life, 2 vols., R. J. Lucas, 1913.

North, CHRISTOPHER. Pseudonym adopted by John Wilson (q.v.), professor of moral philosophy at Edinburgh and a prominent contributor to Blackwood's Magazine.

North, SIR THOMAS (c. 1535-c. 1601). English translator. Younger son of Edward, Baron North, his fame rests almost entirely upon his translation of Plutarch's Lives, made from the French version of Amyot. The book was Shakespeare's chief source for Julius Caesar, Antony and Cleopatra, and other classical plays. North wrote in a vivid and powerful style, and was one of the makers of English prose.

Northallerton. Market town and urban dist. of Yorkshire (N.R.), England. It is 30 m. from York on the N.E. Rly., on which it is a

junction, and is the capital of the North Riding. The chief building is the cruciform church of All Saints, mainly of the 12th century, with a fine Perpendicular tower. There are a hospital founded in the 15th century and a grammar school, while near are the remains of a Carthusian priory, Mount Grace (q.v.). The industries include tanning, brewing, malting, and engineering works; also the making of saddlery and other leather goods. Standard Hill, 3 m.



Northallerton arms



Northallerton, Yorkshire. High Street, looking towards the church of All Saints

Valentine

to the N., was the scene of the battle of the Standard (q.v.), 1138. Northallerton was the property, in the Middle Ages, of the bishops of Durham, and they held the

manorial rights until 1845. They had a palace here, and there were at least two religious houses in the town. It was represented in Parliament by two members until 1832, and by one until 1885. It was governed by a local board from 1851 until 1894, when it became an urban district. Market day, Wed. Pop. 4,800.

Northam. Urban dist. and market town of Devonshire, England. It stands near the left bank of the Torridge, 14 m. from Bideford, with a station on the Bideford, Westward Ho and Appledore Rly. Market days, Wed. and Sat. Pop. 5,500. Another Northam is in Hampshire, part of the county borough of Southampton.

Northam. Town of Western Australia. It is 57 m. E. from Perth by rly., a junction for the S. line to Albany, and the centre of a rich agricultural district. Pop. 4,200.

NORTH AMERICA: A GENERAL SKETCH

F. A. McKenzie, Anglo-Canadian Journalist and Traveller

The reader will find further information in the articles America; Canada; Mexico; United States; and in those on the cities and towns, rivers, lakes, and mountain ranges of the continent. See also Aztec; Emigration; Maya; Negro

North America, covering an area of approximately 8,200,000 sq. m., is bounded W. by the Pacific Ocean, E. by the Atlantic, terminates S. in a narrow isthmus connecting it with S. America, and extends N. to the Arctic. It has a population of about 134,000,000.

Politically N. America is divided from E. to W. N. of 46° and the Great Lakes, except Alaska and Newfoundland, is the dominion of Canada. Alaska is a dependency of the U.S.A., which, stretching from the 46th parallel to the borders of Mexico, is the main centre of wealth and population, containing approximately four-fifths of the population of the continent. The republic of Mexico, which extends from the S. land borders of the U.S.A. to Guatemala, is a great plateau of amazing natural wealth. Southward of it is Central America. To the S.E. of the U.S.A. are a large number of islands, including the Bahamas, the negro republic

of Haiti, Santo Domingo, and the island of Cuba.

Geographically the lines of division in N. America run from N. to S. The W. comprises the highest land in N. America, the Cordilleras, extending inland from the Pacific from 300 to 1,000 m. The E. includes the Appalachian highlands, and an Atlantic coastal plain. Between them the Central Plain reaches from N. to S., with an ill-defined watershed in the Height of Land near the U.S.A. northern boundary. The name Rocky Mts. is frequently used for the W. Cordillera; the term is strictly applicable only to the E. ranges which rise sharply to the W. of the Central Plain. Here are the sources of numerous rivers, such as the Missouri, which flow over the Central Plain. W. of the Rockies lies the Great Plateau. In the N. the Yukon plateau has deeply incised river valleys; the plateau of British Columbia gives

rise to the Gold ranges, the Peace and Liard rivers which break through the Rockies to the Central Plain, and Pacific rivers, such as the Fraser, A lava plateau, drained by the Columbia and Snake rivers, connects with the Great Basin, Colorado plateau, and the Mexican plateau. The Great Basin has no river outlet to the sea; the Great Salt Lake is but one of many lake remnants of the ancient and more extensive Lakes Lahontan and Bonneville.

W. of the Great Plateau lie the inner coast ranges, the Cascades and the Sierra Nevada. Crater Lake, Mts. Rainier and Shasta are features of the S. Cascades. Farther W. the outer coast ranges include McKinley and Logan, the highest mts. of N. America, the ranges of Vancouver and Queen Charlotte Islands, and the coast ranges of the U.S.A. Between the two coast ranges lie the Great Valley of California, and the corresponding valley of British Columbia, which has been submerged.

River System of Central Plain

The Central Plain is traversed by the greatest river system of the world. The Mackenzie reaches the Arctic; the Saskatchewan-Nelson enters Hudson Bay; the Great Lakes, Superior, Michigan, etc., send their overflow by the St. Lawrence to the Atlantic Ocean; and the Mississippi-Missouri, with the Ohio and other tributaries, drains into the Gulf of Mexico. Roughly 1,500 m. from W. to E., only the W. portion near the wall of the Rocky Mts. exceeds 2,000 ft. above sea level, except in the Ozark plateau and the Black Hills.

The E. highlands begin in the N. with the Laurentian Uplands, a gentle swell N. of the St. Lawrence. From Newfoundland, through the maritime provinces of Canada and the Appalachians of U.S.A., a series of highlands stretch roughly parallel to the Atlantic coast. Continuity is broken by the St. Lawrence and Hudson rivers, and the Delaware, Susquehanna, Potomac, and other streams cross the coastal plain.

The N. American climate varies from extreme cold in the far N. to tropical heat in Panama. That on the Pacific coast, particularly between Vancouver Island and S. California, is one of the most agreeable in the world. In San Francisco the mean temperature in Jan. is 50° F., and in July 57°. The main prairie belt is exposed to extreme variation, much of it being very cold in winter and very hot in summer. In the cities of N.W. Canada the winter temperature will often reach about 60° below zero

and the summer over 100° above zero. Generally speaking, the American climate is healthy and invigorating; the dry air of the prairies is exceedingly stimulating, while the plateaux of the Rockies are a world sanatorium.

The outstanding characteristic of N. America is the great fertility of much of its agricultural land and its wealth in minerals, timber, fish, and fur-bearing animals. The Spaniards were first attracted thither by the gold of Mexico. The whole line of the Rockies teems with mines and precious metals, and gold has been found in large quantities from Alaska to Mexico. The oil wells of Pennsylvania and of Mexico have yielded some of the greatest fortunes in the world. N. Ontario, at the opening of the 20th century regarded as an impenetrable and almost worthless wilderness, is now found to be a land of extensive mineral deposits, only waiting for communications to be opened up to make their wealth fully available. The vast iron ore fields of Minnesota require no mining.

Much of the great central plain consists of soil so rich that for long the raw immigrant, knowing little or nothing of farming, could break the soil, raise heavy crops and secure a competence. Many of the earliest settlers, drawn by the lure of gold, found that they made their real gains in trapping fur-bearing animals. Gradually the American fur-bearing animals, from the brown bear to the beaver, have been driven N. The professional trappers now do their main work in the Arctic regions.

The banks of Newfoundland are the great cod grounds of the world; the rivers of British Columbia and the adjoining area in the U.S.A. supply half of civilized humanity with canned salmon. From the N. waters comes the world's main supply of seal and porpoise; in the S., around Florida, the giant tarpon flourishes.

Ancient Civilization

Relics still remain, particularly in Mexico and Central America, indicating the existence of a civilization in America at least as old as the Christian era. Icelandic explorers undoubtedly reached the American continent about A.D. 1000, but the modern verifiable history of N. America starts with its discovery by Christopher Columbus in 1492. When the Spaniards first arrived they found a number of nomadic Indian tribes, some inclined to be friendly, some fiercely antagonistic. Large numbers of white men poured in; some were fired by religious zeal, anxious

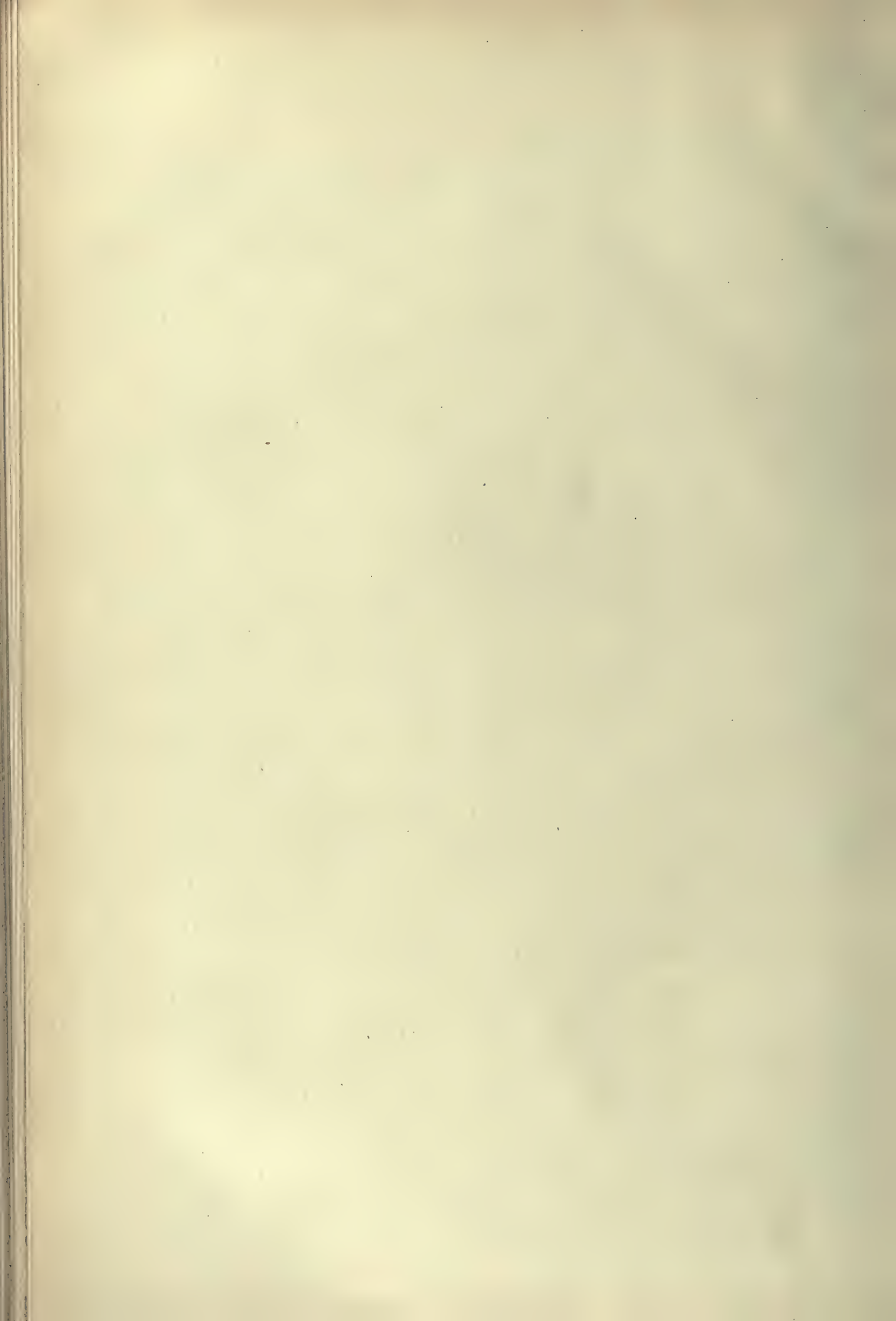
to establish cities of God on earth, but most of them were seeking to obtain the gold and treasures of the Indians. Cortés, in 1519, landed at Vera Cruz on a search for gold, and set out on a campaign of conquest through Central Mexico, eventually reaching S. California. Ponce de León discovered Florida in 1512.

Champlain and Quebec

In 1497 John Cabot discovered Newfoundland. In a subsequent journey he penetrated farther, giving the British kings in generations to come an excuse for great territorial claims. In 1524 Giovanni da Verrazano, sent out on behalf of the king of France, skirted the Atlantic coast-line and discovered the entrance to the Hudson river. Ten years later Jacques Cartier entered the Gulf of St. Lawrence, and at the beginning of the 17th century Champlain established Quebec. These were the forerunners of a great French settlement which to-day, although merged into the British empire, still racially dominates a large part of E. Canada. A few months after Champlain reached Quebec, Henry Hudson penetrated the Hudson river and laid the foundations of New York. Extensive Dutch settlements in New York and Pennsylvania followed.

The British were comparatively late in setting out to conquer America. Sir Walter Raleigh was the real pioneer of British emigration, but one attempt at settlement in N. Carolina was a failure. Virginia seemed at first as though it would be a colony only in name, but the defeat of the Armada and the endless raiding of the Spanish treasure ships in the Caribbean Seas by the British captains marked the growing decline of Spain in America.

Raleigh handed his rights over to two joint stock companies of merchant adventurers, working partly in accord and partly as rivals, the London and the Plymouth companies. King James granted a charter, giving the London company the Atlantic coast from Cape Fear to the Potomac, and the Plymouth company the coast from Long Island to Nova Scotia. These concessions were to extend to the Pacific in parallel strips. The zone of land between them was to be the prize of the one that settled there first. One notable clause in the charter expressed what was even then the essential feature of British colonisation. The settlers, it was provided, were to enjoy the political and civil rights and privileges that belonged to every free Englishman at home.



The first permanent English colony was made at Jamestown. It came near to ruin, and was only saved by the initiative and daring of John Smith. Sir Walter Raleigh had introduced the smoking of tobacco when in England, and the best tobacco could be grown in Virginia. Numbers of English farmers flocked over and cultivated Virginian land to their own great profit. Later on, after the fall of Charles I, many of his cavaliers settled in Virginia. The Pilgrim Fathers (q.v.) led the famous exodus of British Nonconformists to New England. Virginia and New England still show the contrasting groups from which they sprang; the Virginians, charming, hospitable, and gallant; the New Englanders, shrewd, stern, doers of great things. The British stock gradually dominated. Only Mexico and Central America have retained their dominating Spanish characteristics, and Quebec the French speech and ways.

The Negro Problem

During the greater part of the 19th century the white men steadily conquered the west. There were tragic and bitter wars between pioneer settlers and the Indian tribes, who were gradually disarmed and given reservations, where they could live their own life. Sir John Hawkins, who with Drake fought the Spanish Armada, started a traffic which was to create America's greatest racial problem. He began kidnapping negroes on the coast of Guinea, and bringing them to the West Indies as slaves. The traffic grew, the negroes being sold to the tobacco planters of Virginia and to the cotton growers of the south. The result of this traffic is the negro population in the U.S.A., numbering approximately ten millions.

The discovery of gold in California in 1848 caused an immense migration to the Pacific coast. The British Government sent troops across Canada, and laid at New Westminster the foundations of British Columbia. The building of rlys. from the Atlantic to the Pacific marked the main stage in the settlement of the continent. Large numbers of Scottish peasants settled in Canada early in the 19th century, and still form some of the most successful farming communities there. The great famine in Ireland was followed by a wholesale exodus to the U.S.A.

The rly. era and the immense industrial activity brought about by the opening up of mines and the growth of manufactures in the last half of the 19th century, led to a great inflow of settlers from Europe,

who have materially affected the life of both Canada and the U.S.A. Western Canada has been mainly peopled by farmers from the U.S.A. and labourers from E. Europe. Italians and Eastern Europeans are the unskilled and semi-skilled immigrant labourers of America.

Many Chinese were brought over to help in the building of the trans-Pacific rlys. They were followed by Japanese. This Oriental immigration caused considerable alarm, and severe restrictive measures have been passed against it in both the U.S.A. and Canada.

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Northampton, England. Town Hall, built in 1864. Top, right, exterior of the round church of S. Sepulchre

North American Review, THE. New York monthly. It was founded in Boston, May, 1815, an outcome of the Monthly Anthology or Magazine of Light Literature of the Anthology Club (1804-11). Originally a quarterly, it was changed into a monthly after its purchase by Allen Thorndike Rice in 1877. W. C. Bryant, whose *Thanatopsis* appeared in its pages in Sept., 1817, Longfellow, W. H. Prescott, and J. L. Motley contributed to it; and among its editors were R. H. Dana, Edward Everett, J. R. Lowell, C. E. Norton, and George Harvey. A simultaneous publication of articles in this review and the French *Revue des Deux Mondes* was inaugurated in 1891.

Northampton. Co. and mun. bor. of Northamptonshire, England, also the co. town. It stands on the left bank of the



Nene, 66 m. from London, and is served by the L. & N.W. and Mid. Rlys. The chief buildings are the four parish churches.

Northampton arms S. Peter's, a fine building, mainly Norman; S. Giles, varied in style and of somewhat later date; All Saints, rebuilt after



1675; and the round church of S. Sepulchre. There is a modern Roman Catholic cathedral. S. John's and S. Thomas's hospitals are old foundations, the former being an interesting medieval building. The county hall dates from the 17th century, and the grammar school from the 16th. The town hall, museum, free library, and corn exchange are modern. The town has a large market place, and its public parks include the racecourse and Abington Park. It has a service of electric tramways, an opera house, two theatres, and picture palaces. The chief industry is the manufacture of boots and shoes. Other industries include tanning, brewing, ironfounding, and brickmaking.

Northampton began as an English settlement. After the Norman Conquest a castle was built here, and later the kings held parliaments therein. It was made a corporate town in the 12th century, and sent two members to Parliament until 1918, when the representation was reduced to one. It was made a county borough in 1888. The making of boots began here in the 13th century. In 1675 much of the town was destroyed by fire. At Hardingstone, 1 m. to the S., is one of the existing Eleanor crosses, and near the town were several religious houses. Market days, Wed. and Sat. Pop. (1921) 96,923.

Northampton. City of Massachusetts, U.S.A., the co. seat of Hampshire co. It stands on the Connecticut river, 17 m. N.N.W. of Springfield, and is served by the New York, New Haven, and Hartford, and the Boston and Maine rlys. It contains the Clarke Institute for Deaf Mutes, and Smith College for girls. Silk goods, stoves, lumber products, cutlery, and brushes are manufactured. Northampton was settled in 1654, and became a city in 1883. Pop. 22,000.

Northampton, Assize of. Body of instructions amounting in practice to laws, issued by Henry II and his advisers, at Northampton, in 1176. It was an expansion of the Assize of Clarendon (*q.v.*), and was in the form of directions to the judges about to go on circuit throughout England. The punishments to be inflicted on criminals were made more severe, and the powers of the sheriffs curtailed, while other articles dealt with questions of land tenure and dower.

Northampton, BATTLE OF. Fought July 10, 1460, during the Wars of the Roses. The Lancastrian host, with which was Henry VI, was encamped in a protected position in some fields outside Northampton, when the Yorkists, under Warwick and the future Edward IV, who had just returned from exile, found and attacked it. The fight was soon over, for Lord Grey de Ruthyn turned traitor, and with his help the Yorkists got within the entrenchments of their foes, inferior in every way. The duke of Buckingham and about 300 other Lancastrians are slain.

Northampton, EARL AND MARQUESS OF. English titles borne by the family of Compton since 1618 and 1812. There was an earl of Northampton in the time of William the Conqueror, and later the earldom became hereditary in the family of Bohun, whose male line came to an end in 1373. In 1547 William Parr was made marquess of Northampton. A brother of Catherine Parr, he was made a baron in 1539, and was also earl of Essex and a leading man under Edward VI. A supporter of Lady Jane Grey, he was sentenced to death under Mary, but the sentence was not carried out, and he died Oct. 28, 1571.

The title of earl of Northampton was revived in 1604 for Henry Howard, on whose death in 1614 it

became extinct. In 1618 William Compton was made earl. He was the son of Sir Henry Compton, who



Spencer Compton,
2nd Marquess of
Northampton

was created Baron Compton and was lord president of the marches of Wales. From James, the 3rd earl (d. 1681), who fought for Charles I, the earldom passed to Charles, the 9th earl. In 1812 he was made a marquess and his descendant still holds the titles. Spencer, the 2nd marquess (1790-1851); was president of the Royal Society; William, the 5th marquess (1851-1913), was a philanthropist and, before succeeding to the title, a Liberal M.P. From 1880-82 he was lord-lieutenant of Ireland. The family seats are Castle Ashby, Northampton, and Compton Wynyates (*q.v.*), Warwickshire. The marquess's eldest son is called Earl Compton.

Northamptonshire. County of England. An inland and eastern co., its area is 998 sq. m. The surface is mainly undulating except in the soke of Peterborough, which is in the fen country. The highest point is Arbury Hill, near Daventry.

The principal rivers are the Welland, dividing the county from Leicestershire and Lincolnshire, and the Nene. The Avon,

Cherwell, Leam, and Ouse rise in the county, which is served by the L. & N.W., G.N., Mid., and G.C. Rlys., and by the Grand Union, Grand Junction, and other canals. Northampton is the county town; other large places are Peterborough, Kettering, and Wellingborough. Higham Ferrers, Daventry, and Brackley are small boroughs, and there are a number of urban districts. The county has much fertile soil, wheat and barley being grown and cattle and sheep reared on a considerable scale. Boots and shoes are made in the towns and villages. It is famous as a hunting county. For administrative purposes Northamptonshire is divided into two counties, each having a county council. One is Northampton proper and the other the soke of Peterborough. It sends four members to Parliament.

In addition to the cathedral at Peterborough the county has many fine churches, and contains Fotheringhay, Holdenby House, Burghley House, Althorp, and Castle Ashby. There are remains of castles at Barnwell and Rockingham. In the county are earthworks at Arbury and elsewhere, Roman remains at Icrechester, and monastic ruins at Irthlingborough and Higham Ferrers. There are some remains of Rockingham, Whittlebury, and Salcey Forests. Pop. 364,000.

LITERARY ASSOCIATIONS. Thomas Fuller was born at Aldwinkle St. Peters and there received his early



William Parr,
Marquess of
Northampton



Northamptonshire.

Map of the eastern inland county of England, famous for the manufacture of boots and shoes

education; while at the neighbouring Aldwinkle All Saints was born John Dryden. A later poet was John Clare, the peasant-poet, born at Helpston. William Law was born at King's Cliffe, William Paley at Peterborough, John Hervey, the author of *Meditations* among the Tombs, at Hardingstone, and James Harrington, author of *Oceana*, at Upton. Rockingham Castle was partly described by Charles Dickens as the Chesney Wold of *Bleak House*.

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Northamptonshire Regiment.

This was originally the 48th and 58th Foot, the former having been

embodied in 1741 and the latter in 1755. It first saw active service in Flanders, 1744, fighting at Tournai and Fontenoy. The

regiment was present at the capture of Louisburg, 1758, and Quebec, 1759. As evidence of its share in the defence of Gibraltar, 1779-83, the "Castle and Key" is seen on its badge. It fought under Abercromby in Egypt in 1801 and was specially mentioned by the duke of Wellington for gallantry at Talavera. After engaging in the New Zealand War, 1845-47, it took part in the Crimean War, and fought in South Africa in 1879 and 1881, and also in 1899.

In the Great War the 1st battalion formed part of the original expeditionary force and fought at Mons and in all the other battles of 1914. Attached to the 1st division, it took part in the battle of the Somme in 1916 and made a gallant stand at Lombartzyde (q.v.) in 1917. The 4th battalion (territorial) fought in Gallipoli in 1916, and in Palestine, 1916, showing great gallantry, commemorated by Northampton Mound, at the second battle of Gaza. Northamptonshire yeomanry took part in the British campaign in Italy, 1917-18. The regimental depot is at Northampton. See The 7th (S) Battalion, the Northamptonshire Regiment, 1914-19, H. B. King, 1920.



Northamptonshire Regiment badge

Northanger Abbey. Novel by Jane Austen. It was first published posthumously in 1818, though it had been completed in 1803. Notable for its clever rendering of social life at Bath, and its essay dialogue, the story was originally designed as an ironical skit on the romantic school of fiction then popular.

North Bay. Town of Ontario, Canada. The capital of the Nipissing district, it is 360 m. from Montreal, and stands on the N.E. side of Lake Nipissing. It is served by the main line of the C.P. Rly. and the C.N. Rly., and is a terminus of the Temiskaming and Northern Ontario Rly. Pop. 7,800.

North Berwick. Royal and mun. burgh and watering-place of Haddingtonshire, Scotland. It



North Berwick arms

stands at the entrance to the Firth of Forth, 23 m. from Edinburgh, and is served by the N.B. Rly. With fine sands, it is famous for its golf courses. Behind the town is Berwick Law, a conical hill, 610 ft. high, and near are the Bass Rock and Tantallon Castles. North Berwick, so named because of its position with relation to Berwick-on-Tweed, was made a royal burgh about 1400, and was then a flourishing port. Pop. (1921) 5,200.



North Berwick, Haddingtonshire. Ruins of Tantallon Castle, formerly a stronghold of the Douglas family

Firth

Northbourne. Village of Kent, England, 3 m. from Deal. The chief building is the cruciform church of S. Augustine. The village gives the title of baron to the family of James, whose residence, Betteshanger, is near. The title dates from 1884, when Sir W. C. James, Bart., M.P., was made a baron.

North British Railway. Scottish rly. company. Its first line, from Edinburgh to Berwick, with a branch to Haddington, was opened in 1846, and in 1865 it took over

the Monkland and Kirkcaldy line, the oldest in Scotland. Other amalgamations followed, altogether



North British Rly.

over 50 small lines being made part of the North British system, which now has a total mileage of 2,739. The main line is from Aberdeen through Dundee to Edinburgh, whence it forks to Carlisle and Berwick to meet the main English routes. Fifeshire is covered with a network of lines, and the pleasure resorts on the E. and the W. coasts are also served. It owns the Tay Bridge and uses the Forth Bridge (q.v.). Its headquarters are at 23, Waterloo Place, Edinburgh, where it owns Waverley Station, and its works are at Cowairs, Glasgow. Its capital is £67,000,000.

Northbrook,

THOMAS GEORGE

BARING, 1ST

EARL OF (1826-

1904). British

politician.

Born Jan. 22,

1826, he was

the eldest son

of Sir Francis

Baring, who, in

1866, was

created Baron

Northbrook.

Educated at Christ

Church, Oxford,

he entered Parli-

ament in 1857 as a Liberal for Pen-

ryn and Falmouth,

and the same year

was made a lord of

the admiralty. In

1866 he succeeded

to the peerage.

Northbrook was

under-secretary for

war 1868-72, and

from 1872-76 vice-

roy of India. In

1876 he was made

an earl, and from

1880-85 he was

first lord of the

admiralty. In

1885 he separated

himself from Gladstone, being op-

posed to Home Rule. He died

Nov. 15, 1904. The family seat

is Stratton, near Winchester. See

Baring; consult also Memoir, B.

Mallet, 1908.

North Cape.

Promontory on

Magerø Island, N. Norway. Gener-

ally accepted as the northernmost

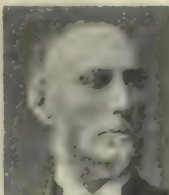
point of Europe, its lat. is

71° 10' 40" N. The most northerly

continental point is Nordkyn. A

dark, slate-coloured rock, it reaches

an elevation of 968 ft.



Thomas Baring, 1st Earl of Northbrook

Stereoscopic Co.

VISCOUNT NORTHCLIFFE

H. W. Wilson, of the Editorial Staff of The Daily Mail

Further references to Lord Northcliffe's activities are made under Daily Mail; Propaganda; Times. See also Journalism; Newspaper

Alfred Charles William Harmsworth, Viscount Northcliffe, of St. Peter, in the county of Kent, British newspaper owner, was born at Chapelizod, Dublin, on July 15, 1865. His father, Alfred Harmsworth, was a barrister-at-law of the Middle Temple.* His mother, Geraldine Mary Maffett, was a daughter of a well-known banker.



Northcliffe. Alfred Harmsworth in 1895

As a child he showed a bent for journalism, and in 1878 started a school magazine at Henley House School, W. Hampstead. When only 15 he received his first paid employment as a journalist in work for G. S. Jealous, the editor of The Hampstead and Highgate Express, an acquaintance of his family, and in 1881 he began to contribute to various periodicals for young people, and to newspapers as a "free-lance" journalist, also at this time travelling extensively on the Continent. At the age of 17 Sir W. Ingram, then proprietor of The Illustrated London News, made him assistant-editor of Youth, and he meantime developed his work by contributing to other newspapers. After a severe attack of pneumonia in 1884, he was ordered to live out of London.

He went in 1885 to Coventry, where he worked for Iliffe & Sons, who owned numerous publications, among them the leading cycling weekly and The Midland Daily Telegraph. He was offered a partnership by Mr. Iliffe, but declined, and in 1887 returned to London and founded a publishing business. In 1888 he established the weekly journal *Answers* (q.v.), which

achieved great financial success, and was the forerunner of many other periodicals, the profits from which soon reached £50,000 a year. *Answers* was floated as a limited company and was thus the germ of the gigantic business of the present Amalgamated Press.

Between 1889 and 1894 Alfred Harmsworth travelled widely throughout the empire and the U.S.A. In 1894 he and his brother Harold, afterwards Viscount Rothermere (q.v.), acquired the London Evening News, which was then in a bankrupt condition. It was re-organized and speedily became a prosperous newspaper. The same year he financed the Jackson-Harmsworth Arctic Expedition, which under F. G. Jackson wintered in Franz Josef Land and explored that desolate archipelago. At the general election of 1895 he stood as one of the two Conservative candidates at Portsmouth, polling 9,717 votes against the 10,451 and 10,255 of the two Liberals elected.

On May 4, 1896, he founded The Daily Mail, a halfpenny morning newspaper on boldly original lines, giving compactly all the news which at that date was found in its penny competitors. Its appearance revolutionised British journalism: the methods which Alfred Harmsworth introduced, and his system of arrangement, have since been so universally copied that modern newspaper readers find it difficult to realize how far-reaching was his influence. But it may generally be said that for the next 25 years he led every great newspaper enterprise, and that his brain was inexhaustible in innovations, improvements, and surprises.

The newest machinery was introduced; the system of distribution perfected; and at the outbreak of the Boer War the sale of The Daily Mail had risen to 700,000 daily, at times reaching the then unpre-

cedented total of 1,100,000. The net daily sale is now over 1,350,000 copies, though owing to the enormous advance in cost of paper and labour the price had to be raised to a penny on March 5, 1917. In 1905 he established a continental edition of The Daily Mail in Paris; and as from 1900 the paper had also been produced in duplicate in Manchester each night, it was now issued from three different offices, covering the whole of Western Europe. In 1903 he founded The Daily Mirror, disposing of it in 1914 to his brother, Viscount Rothermere. In 1904 he had received a baronetcy, followed in 1905 by a peerage.

With his brother, Lord Rothermere, he acquired in 1906 a large tract of forest, with lakes, water power, and rivers, for the manufacture of paper, and organized the Anglo-Newfoundland Development Company. In 1908 he became chief proprietor of The Times.

At the outbreak of the Great War the newspapers under his control, and known throughout the world as "the Northcliffe Press," included The Times, The Daily Mail, Evening News, and Weekly Dispatch, and the Overseas Daily Mail. Lord Northcliffe's influence abroad and throughout the Empire was great, owing to the foresight and patriotism which he displayed and the enormous net sales of his newspapers. He had warned the British



Photo, Hoppe

Northcliffe

* In some copies of our first impression he is, by an error in revision, wrongly described as a solicitor and recorder of Dublin. Ed.

people for 15 years before the war of the danger from Germany, but never in a provocative manner; he advocated a strong navy; he supported his great friend, the late Lord Roberts, in his campaign before the war for universal service; he urged the rejection of the Declaration of London, a code of seaway that would have paralysed the British navy's power of blockade; he was the persistent advocate of aircraft, and offered through The Daily Mail various prizes of £10,000 each for great flights, the last of which was won in 1919, when the Atlantic was crossed in a single day by British airmen in a British aeroplane. During the war he insisted on the most energetic prosecution of operations. He carried out the famous campaign for munitions in 1915, which compelled him severely to criticise Lord Kitchener's administration at the War Office; largely due to his unwavering advocacy, compulsory service was introduced in 1916; and his criticisms brought down Asquith's Cabinet at the close of that year and resulted in the formation of a small War Cabinet to direct operations.

He opposed the Dardanelles expedition and was instrumental in securing its withdrawal. He advocated with success the construction of aircraft on a great scale. He paid numerous visits to the various Allied fronts, and in the crisis of the German attack on Verdun in 1916 went to that place, conferred with Marshal, then General, Pétain, and in a long dispatch, which was given freely to the Allied and neutral Press, boldly stated, in opposition to the generally accepted view, that Verdun would hold out. His Times articles on these war experiences in France and Italy were republished under the title, *At the War, 1916*. The book had an enthusiastic reception and its substantial profits went to the British Red Cross. Regarded in Germany as the incarnation of British spirit during the war, a periodical was issued by the Germans called *The Anti-Northcliffe Mail*, entirely devoted to attacks upon him. In 1916 the Germans honoured him by producing a "hate-medal" of him in bronze.

At Lloyd George's special request, he accepted in May, 1917, the appointment of chairman of the British war mission in the U.S.A. and arrived in New York on June 11. He controlled British expenditure in the U.S.A., amounting to over £10,000,000 a week, and maintained touch with President Wilson's administration; on the eve

of his return in Nov., 1917, the British War Cabinet telegraphed "their complete satisfaction with the manner in which you have fulfilled your mission," and congratulated him on the "great energy and effect" with which he had explained to the American people the British effort and the needs of the Allies. On behalf of the American Government, Col. House testified to the "energy and generosity" of his cooperation. He was thanked by the king and advanced to the rank of viscount.

Offered the appointment of Air Minister, he declined it, but in Feb., 1918, accepted an invitation from



Northcliffe. German "hate-medal"

Lloyd George to become Director of Propaganda in Enemy Countries, on the understanding that he was to remain free to criticise. His work in this department by the evidence of all the German leaders was largely responsible for the collapse of Germany and Austria. Ludendorff described him as "a master of mass-suggestion," and after the armistice Lloyd George in expressing his thanks stated that he had "many direct evidences of the success of your invaluable work and of the extent to which it has contributed to the dramatic collapse of the enemy strength."

At the general election of 1918, and in the peace negotiations, Viscount Northcliffe was ill, but his influence was felt in the reparation terms, which but for his pressure would have let Germany off more lightly. In June, 1919, he underwent a successful operation for an adenoma of the thyroid gland, and soon regained his health. On May 1, 1921, he took the chair at a luncheon at Olympia given to 7,000 members of The Daily Mail staff and friends, to commemorate the 25th birthday of that newspaper; and on July 16, 1921, he left England on a world tour, investigating in Canada, Australia, and New Zealand emigration opportunities, and, in the Far East, Japanese and Chinese questions.

His chief recreations were motor-

ing—he was one of the first motor-drivers in the 'nineties—golf, and fishing. Always a great traveller and reader, he believed in early rising, beginning his day's work at 6 a.m., and going early to bed. His London house was 1, Carlton Gardens, S.W.; but his home at Elmwood, St. Peter's, Thanet, was his favourite place of residence from 1890. He died Aug. 14, 1922.

Viscount Northcliffe married on April 11, 1888, Mary Elizabeth, daughter of Robert Milner, of Kidlington, Oxon, and St. Vincent, W. Indies. For her services to the Red Cross during the Great War Viscountess Northcliffe was created Dame Grand Cross of the Order of the British Empire. In 1923 she married Sir Robert Hudson.

Northcliffe Glacier. Huge ice mass on the coast of Queen Mary Land (q.v.), Antarctica, falling into Robinson Bay. It was discovered and named by Sir Douglas Mawson (q.v.), Dec. 25, 1912.

Northcote, HENRY STAFFORD NORTHCOTE, 1ST BARON (1846-1911). British administrator. Son of the first earl of Iddesleigh, he was born in London, Nov. 18, 1846, and educated at Eton and Merton College, Oxford. Secretary to his father, then chancellor of the exchequer, 1877-80, he was M.P. for Exeter, 1880-99, holding various minor posts in Salisbury's cabinet, 1885-87. He was appointed governor of Bombay, 1899, and created a peer in 1900. From 1904-8 Northcote was governor-general of the Commonwealth of Australia. He died Sept. 29, 1911.



1st Baron Northcote, British administrator

Northcote, JAMES (1746-1831). British painter and author. Born at Plymouth, Oct. 22, 1746, he began his art career there as a portrait



James Northcote. British painter

painter, and when about 25 came to London, where the help of Reynolds enabled him to study at the R.A. schools. He spent the years 1777-80 in Italy. He was elected A.R.A. in 1786, and R.A. in 1787; he published his *Life of Sir Joshua Reynolds* in 1813, *One Hundred Fables*, illustrated by himself, in 1828, and *A Life of Titian* in 1830. He died in London, July 13, 1831. See Godwin, W.; Graves, T.

North-Eastern Railway. English railway co. Founded in 1854, it was an amalgamation of the



North Eastern
Rly. arms

York, Newcastle and Berwick, York and N. Midland, and Leeds Northern. In 1863 the historic Stockton and Darlington line was taken over, and between then and 1900 extensions were freely made. The main line runs from York through Newcastle to Berwick. Other places served include Sheffield, Leeds, Bradford, Hull, Durham, Gateshead, Sunderland, Middlesbrough, Carlisle, Tyne-mouth, Stockton, and the Yorkshire watering-places. Around Newcastle about 30 m. of line are worked by electric power.

The rly. owns large docks at Hull, covering 129 acres, and is the joint owner of others. Its steamboats run between Hull and Antwerp and other places on the Continent. Its headquarters are at York, and the works at Darlington, Gateshead, York, and elsewhere. The total length of line owned is 4,990 m. See Railways.

North-East Passage. Name of a route round the N. of Eurasia to China (Cathay). Attempts to make it, undertaken mainly by Englishmen and Dutchmen, Wiloughby and Chancellor, 1553, and Barents, the Dutch navigator, 1594-95, failed in their main purpose, but succeeded in opening up a trade with Russia in furs, oil, etc. The North-East Passage was eventually accomplished in 1878-79 by N. A. E. Nordenskiöld (q.v.). See Arctic Exploration.

Norther. Name for the bitterly cold, often snow-filled, N. and N.W. winter winds experienced in Texas and the Gulf of Mexico region generally. They are caused by the movement of air towards the rear of a vigorous cyclone, and their strength is due to the marked pressure gradients. The norther sometimes causes the temperature to fall 30° F. in an hour.

Northern Lights. Name popularly given to the phenomenon of the Aurora Borealis (q.v.).

Northern Territory. Part of Australia directly administered by the Commonwealth itself. It lies between meridians 129° and 138° E., N. of 26° S., with a coast-line on the Arafura Sea and the Gulf of Carpentaria. From 1863 it formed the N. part of South Australia, and with this status joined the Commonwealth in 1900, but in 1911 it passed under the control of the central authority. The S. com-

prises a highland area, Macdonnell Ranges, part of the Central Australian desert, although water is found in the valleys and can be reached by artesian bores; northwards lies the plateau with extensive pastoral areas suitable for cattle runs; the coastlands are lower and are forested over considerable areas.

The people live mainly in the N. Gold, copper, tin, and wolfram are mined. Darwin is the chief port, and the terminus of the overland telegraph and the N. section of the Transcontinental Rly. The area is 524,000 sq. m. Pop. 25,000, four-fifths aborigines. See Australia, colour map.

Northern Union. Union of professional football clubs that play a game resembling Rugby football. It came into being in 1895 owing to the refusal of the English Rugby Union to recognize professionalism, and its constituent clubs are almost confined to Lancashire and Yorkshire, where they have a large following.

The game played by these clubs differs in several ways from the Rugby game, mainly in being faster and more spectacular. The scrummage consists of six instead of eight players, and the team of 13 and not 15. There is no line-out, its place being taken by a scrummage. A try counts three points and two more are added if a goal is kicked. See Football.

Northey, Sir Edward (b. 1868). British soldier. Born May 28, 1868, he served in the Hazara and



Sir Edward Northey,
British soldier
Russell

Miranzi expeditions, 1891, and in that against the Isasai, 1892. He was in S. Africa, 1899-1902. In the Great War he commanded the 1st batt. K.R.R.C. at Mons and subsequent battles in 1914, the 15th brigade, March-July, 1915, and the Nyasaland-Rhodesia field force, 1916-18, rendering assistance in the conquest of German E. Africa. In 1918-22 he was governor and commander-in-chief of British East Africa (later Kenya Colony), and high commissioner for the Zanzibar Protectorate. He was awarded the K.C.M.G. in 1918.

Northfield. Dist. of Worcestershire, England, now a suburb of Birmingham. It has a station on the Mid. Rly. S. Laurence's is the chief church, and the principal industries are the manufacture of nails and other forms of hardware. Pop. 6,000.

Northfield. Town of Massachusetts, U.S.A., in Franklin co. It is on the Connecticut river, about 50 m. N.W. of Worcester, and is served by the Central Vermont Rly. It is noted as a centre of religious education, largely owing to D. L. Moody, the evangelist, who was born here in 1837. Here is held the annual summer conference of Christian workers. Northfield was incorporated in 1672. Pop. 2,900.

Northfield. Village of Vermont, U.S.A. In Washington county, 35 m. from Burlington, it is known as the seat of Norwich University. Founded at Norwich in the same state in 1819 by a soldier, Alden Partridge, it became a university in 1834. In 1866 it was removed to Northfield.

Northfleet. Urban dist. of Kent, adjoining Gravesend, England. It is on the Thames, 22 m. from London. with a station on the S.E. & C. Rly. The church of S. Botolph is a fine building, partly Decorated and partly Perpendicular. The industries include shipbuilding and the manufacture of cement, paper, and chemicals. Pop. (1921) 15,719.



Northfleet. Seal
of urban district
council

North Foreland. Headland of Kent, England. Off here three actions were fought in the wars with Holland. The first battle opened June 2, 1653, with an attack by the English admirals, Monk, Deane, and Lawson, on the Dutch fleet of Van Tromp. With the arrival of Blake on the following morning the Dutch made a hasty retreat, having lost heavily.

The second battle was begun June 1, 1666, by Monk's attack on the Dutch under De Ruyter, and lasted for four days. On the 2nd the battle opened early, and went against the English. The next morning Prince Rupert hastened to Monk's assistance, but after heavy fighting on the 3rd and 4th, the English were obliged to make the Thames, having lost 20 vessels and 6,000 men. A third battle, fought July 25 and 26, 1666, resulted in the flight of the Dutch. See Foreland, N. and S.

North German Confederation. Alliance formed in 1866 by 22 sovereign German states. The German Confederation of 1815 was broken up by Prussia's attack on her fellow-member Austria in 1866. After the defeat of Austria, a new alliance, the North German Confederation, was formed, Aug. 18, 1866, consisting of Prussia and the remaining states of the old Bund N. of the Main, except Luxemburg,

which was divided between Holland and Belgium. On April 16, 1867, a constituent assembly ratified the constitution, which was proclaimed on July 1. The Bund had an area of 160,000 sq. m. and a pop. of 30,000,000. See Bismarck; Bund; Germany; Prussia.

North Island. The smaller and more northerly of the two main islands of the Dominion of New Zealand. It has a lat. corresponding to that of S. Spain, a more equable temperature and more evenly distributed rainfall than S. Island, and is more definitely suited to the pastoral industry. The E. and S.E. contain probably the finest sheep country in the world, and the S.W. is ideal for dairy cattle. The N. is steadily developing a fruit industry.

The island comprises four provincial districts: Auckland, Hawke's Bay, Wellington, and Taranaki; and contains in Auckland and Wellington the two largest cities of the dominion. Rlys. connect Wellington with Auckland, Napier, and New Plymouth. Its area is 44,130 sq. m. Pop. 700,000. See New Zealand.

Northmen. Name of the Scandinavian sea-rovers who began their incursions upon the coasts of W. Europe late in the 8th century of our era. The names Northmen and Viking cover four groups: the Swedes and the Goths, who confined their attentions mainly to the Baltic shores; the Danes from Jutland and Slesvig; and the Norsemen from Norway; though both Danes and Norsemen were names sometimes applied to the whole. In England, the name of Ostmen, the men from the East, was sometimes applied.

Masters of the Danelagh

The first recorded raids on English, Irish, and French soil respectively are dated in 787, 795, and 799. In the first instance the raids of the Northmen were mere landings in search of booty by pirate crews composed of free warriors who followed some captain of repute. During the early part of the 9th century they were still for the most part ravaging in small bands. Then the small bands began to grow into confederate fleets, Danes and Norsemen acting together.

In the second half of the 9th century supreme kings were establishing themselves both in Denmark and in Norway; and this process encouraged the minor chiefs to seek other lands, and to settle. Danish hosts established themselves in England and made themselves masters of the whole district known as the Danelagh;



North Sea. Chart showing the fishing banks, depths, and steamship routes between Britain and the principal Continental North Sea ports

though Alfred drove them out of Wessex, and in the next century his son and grandson forced them to own the overlordship of the king of England. In France the Viking hosts met with a check when they laid siege to Paris in 885.

After the permanent establishment of the Danelagh in England and the dukedom of Normandy in France, in 912, the raiding of France and England ceased to be a profitable employment for Danes and Norsemen, though the latter acquired a supremacy in the extreme N. of Scotland, over the islands of the Hebrides, and on the E. coast of Ireland; until their efforts at further conquest in Ireland were finally checked by a crushing defeat at Clontarf at the hands of the Irish King Brian Boroihme in 1014. In the days of Ethelred II, at the close of the 10th century, the Danish and Norse raids upon England revived; but the Danish leader Sweyn became king first of Denmark, and

then, in 1013, of England as well, and in the reign of Canute Denmark finally lost the characteristics of a pirate state. See Danelagh; England; History; Goths; Norman; Norse; Russia; Varangians; Viking; consult also History of the Norman Conquest, E. A. Freeman, 2nd ed. 1876; The Viking Age, P. B. du Chailly, 1889.

Northolt. Village of Middlesex, England. It is 2½ m. S.S.W. of Harrow, and is a junction on the G.C. and G.W. rlys. Pop. 700.

North Pole. Lat. 90° N., one terminus of the earth's axis. The Pole itself is the central point of the shallow Arctic basin wherein lies the Arctic Ocean, of which the surface near the Pole is floating and moving ice, so that subsequent explorers would not necessarily find a trace of Peary's visit.

North Sea. Arm of the Atlantic Ocean, and the most easterly of the British seas. It covers part of the continental shelf of W. Europe, and except for the Scandinavian

deep, over 2,400 ft., off the S. of Norway, it is relatively shallow, with an average depth of 120 ft. in the S. and 350 ft. in the N.

This sea being physically a connexion between the lowlands of E. Britain and the great European plain, its coast-line is not a permanent feature; the Zuyder Zee is an accidental enlargement, and English coastal areas are being slowly removed, while the great rivers tend to fill it with their loads of sediment, so that the Rhine delta and the Thames estuary experience encroachments of the land on the sea. Structurally the North Sea is part of the lowland between the old mountains of Scandinavia and Scotland and the middle-aged mountains of S. England, Belgium, and N. Germany. The S. outlet by the Strait of Dover is not inherent to the structure, and occurred in a comparatively recent geological epoch. Between these ranges the rivers form one system which, in the days before the area was drowned and the plains were connected by dry land, may have all—Thames, Ouse, Lower Rhine, Elbe, etc.—joined to make one great N.-flowing river.

The submarine surface is marked by inequalities; the Dogger, Jutland, and Great Fisher banks are submarine ridges, the Silver and other pits are submarine hollows. The waters slowly circulate, a S.-flowing current along the British coast becoming a N.-flowing current on the Eastern shore; the tides are unusually complicated; they enter by the Strait of Dover, and round Scotland flow S. along the British coast, and N. along the E. shore, scouring the great estuaries on both sides.

Owing to these movements the floating eggs of the food fishes are widely distributed, and the shoals of fish, such as the herring, appear to follow regular movements which control the work of the trawlers. These fish feed on the large quantities of the lower forms of animal and vegetable life in which the North Sea abounds, and thus this marine area is one of the chief of the world's fisheries.

Commercially the North Sea is the most important water area in the world, and historically, with the English Channel, it is a predominant physical feature of Europe. The insularity of Britain which it has ensured is responsible for the British Empire, the racial character of the U.S.A., and the consequent interference during the critical periods of the great European wars of powers based on the sea, whose activities have profoundly moulded the course of

events during the wars themselves and during the intervening periods of peaceful development. Its area is 190,000 sq. m.; maximum breadth 420 m., and length 700 m. See Atlantic Ocean; Dogger Bank; Europe.

North Sea Fisheries Convention. Agreement made at The Hague in May, 1882, between Great Britain, Germany, Belgium, Denmark, France, and Holland, with power reserved to Sweden and Norway to come in on giving notice. This convention declares that the fishermen of each country shall have the exclusive right of fishing within a distance of 3 m. from low-water mark along the whole extent of their respective countries, as well as of dependent islands and banks. As regards bays and inlets the 3 m. are to be calculated from a line drawn across the bay in the part nearest the entrance where the bay does not exceed 10 m. in width.

Other clauses decree that fishing boats are to be registered, and to bear their registration marks and numbers distinctly marked, and to carry official papers showing their nationality. Minute rules and regulations govern the manner of fishing and the behaviour of fishing boats to each other, e.g. the right to cut entangling lines. The regulations are to be enforced by special cruisers, which have the right of visit and search and arrest. The arrested boat is to be handed over to its own country to be dealt with and punished.

North Staffordshire Rly. English railway company. It dates from 1847, when three existing lines in and around Staffordshire were amalgamated. Extensions were made, and other lines acquired, while the company joined with the G.C. Rly. in controlling the Marple and Bolton Rly. It



North Staffordshire Railway arms

owns the Trent and Mersey Navigation, and three hotels. The headquarters and works are at Stoke-upon-Trent; other towns served by it are those of the Potteries, Crewe, Macclesfield, Derby, Uttoxeter, and Burton-upon-Trent. The length of single track owned is 524 m., and the capital is £11,000,000.

North Staffordshire Regiment. Regiment of the British army. Formed in 1881 by the union of the 64th and 98th Foot, which had been raised in 1756 and 1824 respectively, it received its

alternative title of the Prince of Wales's on the occasion of the prince's tour to Malta, 1876. In 1759 the 64th Foot served against the French in Martinique, and then fought in the American War of Independence. In 1803 it took part in the capture of St. Lucia and later of Surinam in Guiana. The regiment fought in the China War, 1842, on the Indian frontier in 1851, and in Persia in 1856. Both battalions helped to put down the Indian Mutiny. The 1st battalion served in the Sudan in 1896, and the 2nd took a leading part in the South African War.



North Staffordshire Regiment badge

The regiment sent a large number of battalions to the Great War, the 1st being part of the original expeditionary force. The 8th service battalion was in France by July, 1915, and formed part of the 19th division. Other battalions, including the 4th and 5th Territorials, were engaged in the battle of Cambrai, 1917, in the defensive battles of the spring of 1918, and participated in the final British victories in France in the autumn of that year. The official name The Prince of Wales's North Staffordshire Regiment was changed to the North Staffordshire Regiment (The Prince of Wales's) in Dec., 1920. The regimental depot is at Lichfield.

Northumberland. County of England. The most northerly of all, it is separated from Scotland by the Cheviot Hills and the Tweed. Its area is 2,018 sq. m., and it has a long coast-line on the North Sea. From there the surface rises to the Cheviots, the highest point of which is 2,676 ft., and it varies between moorland and verdant undulations, intersected by fertile and wooded valleys. A geological feature is the Great Whin Sill, a sheet of basalt forming a succession of crags stretching with intervals from the N.E. into Cumberland.

The chief rivers are the Tyne, Tweed, Till, Wansbeck, Alne, and Coquet, and there are several small lakes, Greenlee Lough being the largest. Off the coast are Coquet and Holy Islands, and the Farne Islands. Agriculture flourishes along the coast and in the valley districts, and the rearing of Cheviot sheep and Durham short-horns is actively pursued. There is a coalfield in the county, and the urban industries are mainly associated with this. It is served by the N.E. Rly. Newcastle-upon-Tyne

and Alnwick are the county towns; other places are Tynemouth, Berwick-on-Tweed, Wallsend, Morpeth, and Hexham. Blyth is a fishing port, and there are a number of populous urban districts in the mining area. Three members are returned to Parliament. Until 1882 Northumberland was in the diocese of Durham.

In Anglo-Saxon times Northumberland formed part of the kingdom of Bernicia, and then of Northumbria. Its history is dominated by the fact that it was on the borders between England and Scotland, and was the scene for centuries of constant warfare. It was protected by fortresses, and herein are Flodden, Otterburn, Homildon Hill, and other battlefields. The county contains also Bamburgh, Lindisfarne, and other places of historic interest. The most notable of the castles, now mainly ruins, are Norham, Dilston, Warkworth, Dunstanburgh, Bamburgh, and Prudhoe. Alnwick has been largely rebuilt; Ford and Chipchase are also mainly modern. The Roman Wall passes through the county. Pop. 407,000.

LITERARY ASSOCIATIONS. From its position as a border county Northumberland has rich association with the old ballad literature of the Border district. Among these ballads may be named *The Brave Earl Brand*, *Jack and Tom*, *The Baillie of Berwick*, *Sir Arthur and Charming Mollee*. Bamburgh is reputed by some to be the Joyous Gard of Arthurian legend; it is the scene of much writing in prose and verse concerning Grace Darling, and of Besant's *Dorothy Forster*.

Much of the action of *Scott's Marmion* takes place in the county (Flodden, Holy Isle, Norham). A. C. Swinburne wrote of the county. At Warkworth was born the 17th century historian, John Rushworth, and the hermitage there afforded the subject of Bishop Percy's *The Hermit of Warkworth*. At Newcastle was born Mark Akenside, and Thomas Bewick at Cheryburn, near Newcastle.

Bibliography. History of N., J. Hodgson, 1840; History of N., 9 vols., pub. by N. County Historical Committee, 1893-1909; History of N., C. J. Bates, 1895; *The Roman Wall*, C. J. Bruce, 6th ed. 1909; Northumberland, J. E. Morris, 1916; *Medieval N.*, J. C. Davies, 1918; *Highways and Byways in Northumbria*, P. A. Graham, 1920.

Northumberland, DUKE OF. Title held since 1766 by the family of Percy. There was an earl of Northumberland at the time of the Norman Conquest and afterwards, but as an hereditary title it dates from 1377, when Henry



Northumberland. Map of the north-eastern county of England, famous for its historical associations with the Scottish border

Percy, Baron Percy, was made earl. He was killed in 1408 and the title forfeited, but it was restored to his grandson. His descendants kept the title until the 11th earl died in 1670. From 1551-53 there had been a duke of Northumberland, John Dudley.

The 11th earl's daughter married Charles Seymour, duke of Somerset, and their son Algernon, the 7th duke, was made earl of Northumberland in 1749. He had no sons, and the earldom passed by arrangement to his son-in-law, Sir Hugh Smithson, Bart., who took the name of Percy. In 1766 he was made duke of Northumberland. In 1865, when the 4th duke died, the title passed to a grand-nephew, George, earl of Beverley, and from him the later dukes are descended. The duke's chief seat is Alnwick Castle, and he has extensive estates in Northumberland. His eldest son is called Earl Percy. From 1683 to 1716 George Fitzroy, a natural son of Charles II, was duke of Northumberland, but he died without sons. See Percy.

Northumberland, JOHN DUDLEY, 1ST DUKE OF (c. 1502-53). English soldier and statesman.



John Dudley,
1st Duke of
Northumberland
After Holbein

The attainer of his father, Edmund Dudley (c. 1462-1510), was reversed by Henry VIII, and as Viscount Lisle, John Dudley proved himself a soldier and administrator of ability.

In 1547 he was made earl of Warwick and defeated the Scots at Pinkie. He became earl marshal and duke of Northumberland in 1551. He sought to consolidate his position by the marriage of his son Guildford Dudley to Lady Jane Grey, May, 1553, but his plans collapsed. He was executed Aug. 22, 1553.

Northumberland Avenue. London thoroughfare. Connecting Trafalgar Square with the Victoria Embankment, it derives its name,

like the neighbouring Northumberland Street, once Hartshorn Lane, from Northumberland House (*q.v.*). Opened March, 1876, it contains the Royal Colonial Institute, the Constitutional and National Liberal clubs, offices of the S.P.C.K., the Playhouse Theatre, and the Grand Victoria, and Metropole hotels.

Northumberland Fusiliers. Raised privately in 1674 to assist the Dutch in their fight against



Northumberland Fusiliers badge

France, this regiment was added to the British army as the 5th regiment of the line in 1685, and fought in Ireland, Flanders, and Spain. In 1761 and 1762 it was employed against the French in the Seven Years' War, and later served in America. At St. Lucia the Fusiliers behaved so gallantly in defending the island from the French that they were allowed to wear in their caps the white feathers taken from their foes. and in the Peninsular War they earned their well-known names the "Fighting Fifth" and the "Old Bold". The regiment marched with Havelock to Lucknow, and later served in Afghanistan, Egypt, and South Africa.

In the Great War the regiment fought in nearly every battle area, and besides its regular battalions had five territorial and a large number of service battalions engaged, making a total of over fifty. The 1st batt. was part of the 9th infantry brigade of the expeditionary force. In 1916 the batts. popularly known as the Tyneside Irish and Tyneside Scottish were conspicuous in the battle of the Somme. The regimental depot is at Newcastle-upon-Tyne.

Northumberland House. Former London mansion. It stood on the S. side of the Charing Cross entrance to the Strand, with gardens extending almost to the river. The Grand Hotel and the Constitutional Club occupy part of the site. Built by Henry Howard, 1st earl of Northampton, about 1605, and named after him, it became known as Suffolk House on passing, 1614, to Thomas Howard, the 1st earl of Suffolk; and as Northumberland House, when it became the home of Algernon Percy, 10th earl of Northumberland, 1642. Bought by the Metropolitan Board of Works, in 1873, for £497,000, it was demolished in 1874 to make way for Northumberland Avenue. The lion which once stood on the top of the mansion was removed to Syon



Northumberland House, London. The old mansion, seen from Trafalgar Square, before its demolition in 1874

House, Isleworth. See *Annals of the Strand*, E. B. Chancellor, 1912.

Northumbria. Kingdom of Anglo-Saxon Britain. It stretched from the Humber to the Forth, and from the Pennines and Ettrick Forest to the sea, and was formed about 600 by the union of the smaller kingdoms of Bernicia and Deira. Edwin, king of Northumbria until 633, was the most power-

ful ruler in the whole of England.

After 670. Northumbria declined in importance, and most of its later kings were subject to the rulers of Mercia or Wessex. During this time learning flourished in Northumbria, which produced

Cædmon, Bede, and Alcuin. In the confusion caused by the Danish invasions in the 9th century the native kings of Northumbria died out, but there were one or two kings of Danish origin in the 10th century. See *England: History*.

North Walsham. Urban dist. and market town of Norfolk, England. It stands on the river Ant, 14 m. from Norwich and 131 from



North-West Frontier Province. Map of the province on the border of Afghanistan, the scene of continual political disturbances

London, and is served by the G.E. and M. & G.N. joint. rlys. The chief building is the Perpendicular church of S. Nicholas. At the Paston grammar school, founded in 1606, Nelson was educated. The village of Paston is 3½ m. away Market day, Thurs. Pop. 4,200

North-West Frontier Province. Prov. of N.W. India. The river Indus is the E. boundary except where the Punjab extends

across it to the W. near the Kurram river and where the province extends across it to the E in Hazara. Baluchistan and Afghanistan lie on the W. and Kashmir on the N.E.

The territory described above comprises five British districts and five political agencies. The districts—Dera Ismail Khan, Bannu, Kohat, Peshawar, and Hazara—contain 13,000 sq. m. and 2,200,000 people, most of whom are Mahomedans and more than a third Pathans. The agencies—N. Waziristan, S. Waziristan, the Kurram, the Khyber, and Chitral, Swat, and Dir—cover 26,000 sq. m. and are occupied by independent tribes controlled by the chief commissioner of the province.

The province is mountainous and much cut up into valleys with cross connexion each with the others: the tribes are warlike and turbulent, and military expeditions are continually necessary to maintain a semblance of peace. The administrative control of this difficult area is essential strategically in relation to Afghanistan; hence the seat of administration at Peshawar dominates the Indian end of the Khyber Pass. The Kabul, Kurram, and Gomal rivers cross the prov. from Afghanistan to join the Indus. The mts. are the Hindu Kush, Safed Koh, and Suleiman ranges. The prov. was formed in 1901. See The Punjab, North-West Frontier Province, and Kashmir, J. Douie, 1916.

North-West Mounted Police, ROYAL. Name formerly held by the special force of police maintained for the purpose of keeping order in the sparsely populated parts of Canada. In 1919 it was merged in the new Canadian Mounted Police (*q.v.*). Applicants for admission must be between 22 and 40 years of age, good riders, and of exceptional physique. No married men are admitted. See The Riders of the Plains, A. L. Haydon, 1910.

North-West Passage. Name given to an assumed passage to China (Cathay) round the N. of America. Attempts to find it are associated with the 16th and early 17th century work of such sailors as John and Sebastian Cabot, Frobisher, Gilbert, Davis, Hudson, and Baffin. Two centuries later the quest was followed up by Ross, Parry, Franklin, and others; but it was not until the years 1903-5 that Amundsen, the discoverer of the South Pole, made the complete voyage. See Arctic Exploration.

North-West Territories. Dist. of the Dominion of Canada. Its total area is 1,242,224 sq. m. and it includes, save for Yukon and a

section of Quebec, all that part of Canada lying above 60° N. which was formerly divided between Keewatin, Rupert's Land, and the North-Western Territory. The chief rivers are the Mackenzie, Slave, Great Fish, and Coppermine, and there are a number of lakes, the Great Bear and Great Slave being the largest. Fur-bearing animals abound, and in parts the musk ox and the caribou are found. The Territories are governed by a commissioner and a council of four members, and are watched over by the Royal Canadian Mounted Police. There is no capital, affairs being directed from Ottawa. In some parts minerals are worked, and some of the better land is under wheat, oats, and barley. Elsewhere only small trees, mosses, lichens, etc., are found. The Territories are the remains of the vast area purchased from the Hudson Bay Co. by the Dominion in 1869. Various parts were subsequently taken away to form the new provinces of Alberta and Saskatchewan and to increase the area of the older ones, especially Quebec. See Canada.

Northwich. Urban dist. and market town of Cheshire, England. It stands at the junction of the Dane and the Weaver, 18 m. from Chester, on the Cheshire Lines and L. & N.W. Rlys. It is a centre of the salt industry, the salt being obtained from rock salt mines underlying the town, and also from the brine. Other in-



Northwich arms



Northwich, Cheshire. Old half-timbered houses and shops in the triangular space known as the Bull Ring

dustries are alkali works, breweries, and boat-building. The Weaver is navigable from here. Many of the houses have been damaged by the operations beneath. Market day, Fri. Pop. (1921) 18,385.

Northwood. Residential dist. of Middlesex, England. It is 14 m. N.W. of London, on the Met. and G.C. Rlys., pleasantly situated in well-wooded country, between Pin-

ner and Rickmansworth. With Eastcote, it forms part of the urban dist. of Ruislip-Northwood. The parish church of Holy Trinity, erected 1854, is of flint, with a red-tiled roof; in the churchyard are the graves of Sir R. Morier and the 1st Lord Ebury. On White Hill is the Mount Vernon Hospital for consumptives. The local golf course is over 3 m. in extent, with 18 holes, the nearest railway station being Sandy Lodge Halt. Pop. 4,800.

Norton. Village of Durham, England. The parish lies partly within the parliamentary limits of Stockton, from which the village is 2 m. N. Norton-on-Tees station is on the N.E. Rly. Pop. 6,100.

Norton, CHARLES BOWYER ADDERLEY, 1ST BARON (1814-1905). Born Aug. 2, 1814, and educated at Christ Church, Oxford, he inherited large estates in Warwickshire and Staffordshire from a great-uncle in 1826. He was M.P. for Staffordshire from 1841-78, when he was created Baron Norton. From 1866-68 he was under-secretary for the colonies, and president of the board of trade, 1874-78. He died March 28, 1905. He took a keen interest in social, educational, and colonial questions, and was a pioneer of town-planning.



Charles Adderley, 1st Baron Norton
After G. Richmond

Norton, CAROLINE ELIZABETH SARAH (1808-77). British poet and novelist.

Born in London, a daughter of Thomas and grand-daughter of Richard Brinsley Sheridan, she was one of three beautiful sisters. Her husband, the Hon. George Chapple Norton, whom she married in 1827, brought divorce proceedings against her in 1836, on the grounds of adultery with Lord Melbourne, but

her character was completely vindicated at the trial. Further legal proceedings arising out of disputes on pecuniary matters instituted by her husband in 1853 moved Mrs. Norton to write a pamphlet, *English Laws for Women*, which, with other writings of hers, forms a landmark in the movement for women's emancipation. Her husband died in 1875, and in 1877 she



Caroline Eliza Norton

After J. Bayler

married Sir William Stirling-Maxwell, but died June 15 in the same year. Among her novels are *Stuart of Dunleath*, 1851, and *Old Sir Douglas*, 1868. See *Diana of the Crossways*.

Norton, CHARLES ELIOT (1827–1908). American scholar. Born at Cambridge, Mass., Nov. 16, 1827, he was educated at Harvard, and engaged for a time in business, voyaging to the East Indies in 1849. In 1853 he published an attack on experimental socialism, and travelled in Europe, 1855–57. From 1864–68 he was joint editor with J. R. Lowell of *The North American Review*, visited England, 1868, and was professor of fine arts at Harvard, 1875–1900. Among his works are *The New Life of Dante*, 1859; and *Notes of Travel and Study in Italy*, 1860. He died Oct. 21, 1908.



C. Eliot Norton,
American scholar

Norton St. Philip. Village of Somerset, England. It is 6 m. from Bath, and is notable because here is *The George inn*, which claims to be the oldest licensed house in England. Pop. 500. See *Inn*.

There are many places named Norton in England. One is in Derbyshire, just outside Sheffield, and another is in Durham near Stockton-on-Tees. The latter was at one time a market town. Another Norton is in Yorkshire, being divided by the *Derwent* from Melton.

Norton Sound. Inlet of Bering Sea, Alaska. It lies S. of Seward Peninsula, and is 100 m. across and 150 m. long; along its N. shore are Norton Bay and Godolphin Bay.

NORWAY AND ITS PEOPLE

R. N. Rudmose Brown, M.A., Prof. of Geography, Sheffield, & A. D. Innes

This article is supplemented by articles on the cities, towns, rivers, etc., of the country. See also Denmark; Europe; Sweden; the entries Norman; Northmen; and the biographies of the kings, statesmen, and men of letters of Norway

Norway occupies the western and northern parts of the Scandinavian peninsula. It extends from lat. 57° 17' N. to lat. 71° 11' N., and is bounded W. by the North Sea and Greenland Sea, N. by the Arctic Ocean, and E. by Sweden and Finland. In 1905 a neutral zone 10 m. wide, in which no fortifications are allowed, was established on both sides of the frontier from the sea to lat. 61° N. The land area of Norway is 124,642 sq. m., and the country has a total length of 1,100 m. and a width of 10 to 250 m. The coast-line, excluding minor indentations, is 2,110 m. long.



Norway arms

The greater part of Norway is a lofty plateau of ancient rocks known as the Kjölen or Keel, and averaging 2–3,000 ft. alt. The greatest heights in the N. half of the country lie on or near the frontier, and include Jaeggevarre, 6,283 ft., and Sulitelma, 6,290 ft. In the southern half the elevations are greater in the W., particularly in Dovrefjeld with Snehaetta, 7,746 ft., and in Jotunfjeld with Glittertind, 8,385 ft., and Galdhöppigen, 8,400 ft. Around Christiania Fiord and in the extreme S.E. of the country towards Sweden are the only regions which are relatively low-lying, but even there plains are infrequent and of small extent. Numerous deep valleys break the continuity of the plateau, and some of them afford important cross-country routes, which are followed often with difficulty by roads and railways. The coasts from Stavanger to the Russian frontier are deeply indented by long branching fiords, and fringed with islands and rocks forming the skärgård, in which there is a sheltered waterway of over 1,000 m. for moderate sized vessels. As a rule the sides of the fiords rise steeply to 2–3,000 ft., but in the far N. they are less bold in outline.

The S. coast is less indented, but the great Christiania Fiord leads into the heart of S.E. Norway and is the principal line of access to the country. Long narrow lakes are numerous, the largest being Mjøsen, 140 sq. m. in area. Rivers are short and turbulent as a rule,

and of use mainly for timber-floating and water power. The whole country was once heavily glaciated, but now the glaciers cover only about 2,000 sq. m. The principal glaciers lie around Sogne Fiord and Hardanger Fiord (Jostedalabrae), and about the Arctic Circle (Svartisen). The warm surface drift of the N. Atlantic and the prevailing S.W. winds give Norway a temperate climate. A cool, wet, and stormy climate is experienced in the W. and N. and among the fiords throughout the year; a short, hot summer, and a long, cold, but calm winter are characteristic of the S.E.

Precipitation ranges from 120 ins. a year in the W. to 40 ins. in the interior. Ports are open all the



Norwegian flag,
white and blue
cross on red

year, but those on Christiania Fiord are obstructed by ice in winter, navigation being maintained by the help of ice-breakers. Forests of Scots pine and spruce cover about 20 p.c. of the area of Norway; N. of Trondhjem Fiord the birch is the principal forest tree. On the high ground of the interior, above 3,000 ft. in the S. and above 1,600 ft. in the N., and on the coasts of Finmark, alpine vegetation and tundra prevail. Norway has over 5,000 sq. m. of peat deposits. Animal life includes the bear, lynx, glutton, and wolf, which are all rare except in remote parts; the Arctic fox, common fox, hare, ermine, weasel, beaver, badger, and lemming. Deer include the roe-deer, the elk, now rare, and the reindeer in the N. Several kinds of finner whales, the humpback, white whale, and grampus, as well as seals, are found in Norwegian waters. Bird life is very abundant. Salmon, trout, pike, and perch are found in the rivers and lakes.

CONSTITUTION. The constitution dates from 1814, but has been much modified. The government is a limited hereditary monarchy. The king exercises his authority through a council of state, composed of a minister of state and seven councillors appointed by the crown. The councillors may attend but not vote

in the storting. The legislative body or storting is composed of 126 members, elected directly for three years by all Norwegian men and women not under 25 years of age. Women are eligible for both the council and the storting. The storting, which meets without being summoned by the king, is divided into two chambers. One-fourth of the members form the lagting, the rest the odelsting. The odelsting originates bills and passes them to the lagting, which has the power to approve or reject, but not to amend. A bill twice rejected by the lagting is submitted to a joint session of the two chambers, when a two-thirds majority is required to pass it. The king's approval is required before a bill becomes law, but a bill passed by three successive stornings becomes law in spite of the king's veto.

Local Government

For local administration the country is divided into 18 amt or fylker, and the cities of Christiania (Oslo) and Bergen. The amt is administered by the amtmand, appointed by the crown, and the amtsting or county council, composed of the chairman of the rural communes of the amt, which are governed by elected councils.

The Norwegians, who are of Teutonic stock, are tall, fair, and well proportioned. Enterprising, hardworking, and thrifty, they make the most of their unproductive country, but lack of fertile soil drives the majority to turn to the sea for a livelihood. Health conditions are good, except for a certain amount of tuberculosis and bronchial catarrh.

The population at the census of 1910 was 2,357,790; in 1918 it was estimated to be about 2,500,000. This total includes 21,000 Lapps, who are found only in the north. The birth-rate is high and the death-rate low. Population is largely restricted to the coasts and the valleys. That part of Norway N. of Trondhjem Fiord, about three-sevenths of the area of the country, has only 15 p.c. of the population. Emigration, chiefly to the U.S.A. and Canada, is extensive. Between 1836 and 1910 there was a total of 750,000 emigrants. The result is an abnormal proportion of old people and children in Norway.

The established religion is Lutheran. Dissenters number 62,553. Jews are tolerated. Jesuits are excluded. The king is head of the Church and appoints the six bishops, the archdeacons, and lower clergy. Education, which is compulsory and free from 6½ to



Norway. Map of the kingdom in western Scandinavia. Inset, environs of Christiania (Oslo), the most populous area of the country

14 years of age, is of a high standard. There are many secondary public and private schools. Private schools of sufficiently high standard may receive state aid. In addition to several higher commercial and technical schools, there is a technical college at Trondhjem with 670 students and a university at Christiania, founded in 1811, with 74 professorial chairs and 1,500 students. There are 10 training colleges for primary, and one for secondary teachers. The press flourishes, and even the smallest towns have one or more newspapers.

National Defence

The navy is small and scarcely adequate for coast defence, consisting of only 4 old armoured vessels, 12 gunboats, and some 40 destroyers. Service in the national militia is compulsory, and in time of war all males between 15 and 55 years of age may be called to the colours. This results in a war footing of about 110,000 men.

INDUSTRIES, TRADE, ETC. Soil and climate are not very favourable to agriculture. Norway with 3 p.c. of its area has a smaller

proportion of arable land than any other country in W. Europe. Less than half the cereal foods required are grown at home. The chief crop is oats; barley, rye, and potatoes are also cultivated; wheat is of small importance. The hay harvest is large and important. Cattle are kept principally for milk. In summer they are taken to mountain pastures, but in winter the problem of fodder is often difficult. Dairy farming on co-operative lines is making great progress, and under normal conditions much butter and tinned milk are available for export. Cheese is made mainly for home consumption. Reindeer are the draught animals in Lapland and the mainstay of the Lapps.

Fishing is the principal occupation. Norway claims a four-mile instead of a three-mile territorial limit, and so many of the coastal fishing grounds are under her sovereignty. The cod fishery is the most important. The winter fishing centres in the Lofoden Islands from Jan. to April, and the spring or capelin (smelt) fishery on the coast of Finmark from Feb.

to May. Most of the cod is dried or salted for export as stock fish. The herring and mackerel fisheries are also of great value. Stavanger is the headquarters of the brising or sprat fisheries which supply the fish formerly known as Norwegian sardines. Whaling was forbidden in Norwegian waters in 1903, in response to the demand of the fishermen, who complained that it injured the cod fisheries. For a few years it thrived at Spitsbergen, but is now transferred to the Atlantic. Tönsberg and Sande Fiord have made large fortunes from the whaling off South Georgia, the South Shetlands, and the Falklands. Fur-hunting in the Arctic, carried on from Tromsö and Hammerfest, is on the decline.

Minerals and Manufactures

Norway has few minerals of value. There is no coal. Low-grade iron ores are plentiful and several are worked. The best are near Kragerö and Arendal in the S., and at Kirkenes on Varanger Fiord. Copper ore is worked at Röros, Sulitelma, Lökken, Grong, and elsewhere. Nickel ores increased in value during the Great War; they are mined at Evje and Ringerike, and refined along with imported ore at Christiansand. Ores of zinc, chromium, titanium, and molybdenum are worked in small quantities. A little silver is mined at Kongsberg. Various igneous rocks are quarried for monumental purposes. Natural ice is exported. The timber industry is important, especially around Christiania Fiord, but exports show a steady decline.

Manufactures are increasing with the use of water-power, but are of less importance than fishing, seafaring, and agriculture. They are found principally in the S. Shipbuilding received a great impetus during the Great War. Christiania, Bergen, and other towns have mechanical works. Railway rolling stock is made at Hamar, the largest inland town. Copper is refined at Sulitelma. Tinfos and Stavanger have electric iron-smelting and briquetting works. Electro-chemical products include calcium carbide, nitrates, ferro-silicon, aluminium, etc. Their manufacture is localised at waterfalls, including Rjukan, Odde, Arendal, Tysedal, etc. Paper-pulp and cellulose works are numerous around Christiania Fiord. Other manufactures include paper, matches, and pottery. Textiles are unimportant.

Exports are mainly fish products, timber and timber products, tallow, oils, and skins, but minerals and metals are beginning to assume some importance. The

huge quantities of iron-ore exported from Narvik are Swedish ore in transit. Imports are chiefly food products, machinery, coal, ships, and textiles. Norway's trade before the Great War was principally with the United Kingdom. Norwegian shipping in 1914 stood fourth on the world's list of tonnage. War losses were considerable, but by building and purchase the net loss had been greatly reduced by 1919, when the total tonnage exceeded 2,000,000. Norwegian lines run to all parts of the world, but most Norwegian vessels are employed in the home coasting trade.

Roads are good and sufficient in number for the scattered population. An excellent service of coasting steamers serves all ports. The telegraph and telephone systems link all settlements. Railways are mainly in the S.E. Important trunk lines join Christiania with Bergen, and with Trondhjem, and four lines run into Sweden. The final link, over the Dovrefjeld, of the broad-gauge line from Christiania to Trondhjem was opened in Sept. 1921. The name Oslo was substituted for Christiania in 1925.

LANGUAGE AND LITERATURE. The original language of Norway was Old Norse, which in course of time was replaced by Danish, owing to the political domination of Denmark. Modern Norwegian is thus a variety of Danish, which gradually became modified in spelling and pronunciation. The spoken language is called *rigsmaal* in distinction from the literary form *landsmaal*, which has been made from the various dialects. Legally the two forms of the language are on the same footing. *Landsmaal* is used in most schools, but attempts to replace *rigsmaal* throughout the country have met with only modified success. It is opposed by nearly all Norwegian writers of note.

Norwegian and Danish Literature

Apart from Old Norse literature, which flourished, though not so vigorously as in Iceland, from the 9th to the 13th century, Norway cannot be said to have had any literature of its own until a century ago. Until the separation of Norway from Denmark, Norwegian literature cannot be distinguished from Danish, although the latter contains much work by Norwegian writers. Among the earliest writers were the poets, H. A. Bjerregaard, who sang of Norwegian independence, and H. A. Wergeland, with an advanced revolutionary outlook. The sonnets of J. Welhaven, Norges Daemring, and the epic of A. Munch, The Maid of Norway, belong to the same age.

At a later date Norwegian literature attracted world-wide attention through several writers. Henrik Ibsen, after producing a few historical dramas, found fame as a dramatic reformer and as a critic of modern society. Bjørnstjerne Bjørnson, after publishing some novels of peasant life, turned to drama, and his later work became realistic and psychological. Closely associated with Ibsen and Bjørnson were the poets, J. Lie and O. Kjelland. Later Norwegian writers include P. A. Munch the historian, J. H. Friis, the authority on Lapp folklore, J. O. Lökke the grammarian, the novelists A. Garborg, H. Jaeger, and K. Hamsun, G. Heiberg the dramatist, and H. Aanrud, one of the few humorists Norway has produced. C. Vogt and V. Krag are modern poets, and E. Bjerke, R. Schögen, and S. Rein are novelists of note.

HISTORY. The men of Norway make their first appearance on the historic stage towards the close of the 8th century of our era, when the first raids of the Northmen upon the English coast are recorded. It is probable that the chiefs who established the so-called Danish supremacy in Northumbria were Norsemen rather than Danes, and it is nearly certain that the great Viking Rolf or Rollo, who won Normandy from the French king in 911, was a Norseman. The establishment of a supreme king in Norway was the work of Harald Haarfager, the result of whose policy was an extensive emigration of Vikings to Ireland, the Hebrides, Iceland, and elsewhere.

Introduction of Christianity

Long before his death, in 930, the kingship was thoroughly established, though there was a perpetual strife between his sons and grandsons for the possession of the Norwegian crown. At the close of the 10th century, one of his descendants, the famous Olaf Trygvesson, won the crown, and he began the introduction of Christianity in Norway. Hardly less famous and heroic was Olaf the Thick, who became king in 1015, fought stoutly against King Canute, but was expelled by him from Norway, and not long after his death was canonised. On Canute's death, his Scandinavian empire was parted, and the Norwegians elected as their king Magnus, the son of Olaf. Magnus called in to his support his uncle, Harald Hardrada, who succeeded him as sole king in 1047, and lost his life at Stamford Bridge in battle against King Harold of England, in 1066. Of Harald's descendants

the best knot : are his son Olaf, a peaceful ruler who fostered the trade of the country, and Olaf's grandson, Sigurd the Crusader.

Norway attained to her greatest prosperity under Haakon IV, 1217-63, who induced the Icelanders to acknowledge his supremacy. In his last days, Haakon attempted to make good his claim to Caithness and the Hebrides, but his forces were defeated by the young Scots king, Alexander III, at the battle of Largs in 1263; and a few years later Haakon's son Magnus formally surrendered his claims. Magnus was distinguished as the unifier of Norwegian law: Eric, who succeeded him in 1280, completed the subordination of the Church.

At the death of Eric's brother and successor Haakon V, in 1319, the crowns of Sweden and Norway were temporarily united, the heir to both being the child of Haakon's daughter. Haakon VI lost the Swedish crown, but married Margaret, the daughter of Waldemar IV of Denmark, with the result that their child Olaf succeeded to the crowns of both Denmark and Norway, to which Margaret, by the union of Kalmar, 1397, united the crown of Sweden. From this time till 1814 Norway was subordinated to Denmark. Of this period we need only note that in 1468 the Orkneys and Shetlands were pledged to Scotland on the marriage of James III to a Danish princess.

The separation of Norway from Denmark and her union with Sweden took place as follows. In 1810 the French marshal Bernadotte was chosen to succeed the childless Charles XIII on the throne of Sweden, and, as Charles

John, became crown prince, the *de facto* ruler. Sweden wished to recover Finland from Russia: the crown prince preferred the idea of acquiring Norway from Denmark, a plan which met with the approval of the tsar Alexander I. It was put into execution in 1814, since Denmark in the European complications had taken Napoleon's side, whereas Bernadotte, between whom and Napoleon no love was lost, joined the allies.

When Napoleon was beaten at Leipzig, the crown prince of Sweden had no difficulty in compelling Frederick VI of Denmark to surrender Norway. The French Revolution had stirred up a political revival in Norway, which was therefore very well pleased to be separated from Denmark, but made a bid for independence by electing a king of her own. Charles

John, however, secured the withdrawal of his rival, and the acceptance by Norway of the union with Sweden, accompanied by the preservation of the constitution which



the Norwegians had drawn up for themselves.

In 1818 Charles XIII died, and Bernadotte became king of Sweden and Norway as Charles XIV. Democratic ideas advanced during his reign and that of his son Oscar I. In Norway, however, there was a feeling that in the joint monarchy the interests of the poorer country were subordinated

to those of the larger; nor was there any disposition to find a solution of difficulties through an incorporating union. The majority of the Norwegian Chamber was apt to find itself in opposition to the government, though it could not form itself into a consolidated party capable of keeping the government in its own hands. This unsatisfactory position lasted through the reign of Oscar's sons, Charles XV and Oscar II.

The union was dissolved by decree of the storting, at Christiania on June 7, 1905, with the reluctant assent of King Oscar; and the Norwegian crown was offered to and accepted by Prince Charles of Denmark, the husband of Princess Maud, daughter of King Edward VII; the new king identifying himself with his kingdom by taking the name of Haakon VII. For the first time since the



Norway. 1. Country children in their Sunday clothes. 2. Telemarken peasants at the door of Hitterdal church. 3. Girls in a hay field. 4. Farm girls with a typical low-wheeled cart

death of Haakon VI in 1380, the crown of Norway was separated from the crowns of both Denmark and Sweden.

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Nor'-Wester. Warm dry wind which blows over the Canterbury Plains, E. of the mts. of the S. Island of New Zealand. It is the prevailing wind, which, having crossed the Southern Alps, to whose W. slopes it brings a heavy rainfall, descends to the E. plains, and in so doing is warmed by compression.

Norwich. City and county borough of Norfolk, England, also the county town. It stands on the



Norwich arms

Wensum, near its junction with the Yare, and is 114 m. from London. It is served by the G.E. and a joint line of the Mid. and G.N. Rlys. The city has a service of electric tramways, and steamers go to Yarmouth and elsewhere. Its chief magistrate has been known since 1910 as the lord mayor.

The principal building is the cathedral of Holy Trinity, begun in Norman times, but not completed until about 1500. It displays, therefore, several styles of architecture; features are the long and splendid nave, the lofty spire, and the two apsidal chapels. Two old gateways lead to it, and near are the cloisters, bishop's palace, deanery, and other buildings connected with the foundation.

Of the other churches, the chief are S. Peter Mancroft, a large and noble building, S. Michael-at-Coslany, S. Giles, S. Andrew, and S. Lawrence. The fine Roman Catholic cathedral is modern. Of secular buildings the chief is S. Andrew's Hall. Originally the nave of a monastic church, built in the 15th century, its proportions make it a public hall of unusual magnificence. The guildhall was built in the 15th century. The grammar school was once a chapel. Other buildings include the shire hall, corn exchange, and a drill hall, and there are hospitals, libraries, a technical college, and a training school. Of the castle little more than the keep, dungeons, and battlements remain; it is now used as a museum and art



Norwich, Norfolk. Cathedral of Holy Trinity, from the south-east

Frith

gallery. Borrow's house is now a Borrow Museum. The Maid's Head Hotel is a picturesque old building. Bishop Bridge of the 13th century is still used, and the Strangers' Hall dates from the 15th century. The charitable foundations include the old hospital of S. Giles. There is a theatre, and in 1921 the playhouse, closed by Cromwell, was opened by the Norwich players as the Mad-dermarket Theatre; it is designed as were the theatres of Shakespeare's day, the only one of its kind in England, and is mainly for the production of Elizabethan drama.

The industries of Norwich include engineering works and the making of boots and shoes, crape, beer, starch, mustard, etc. There is a trade along the river, and the city is the business centre of a large district, being still in a sense the capital of E. Anglia. It is the headquarters of important insurance companies, but amalgamations have made its banks less prominent than formerly. Still an important agricultural centre, it

has a large cattle market, and is known for its canaries. The borough includes Carrow, where there was a Benedictine abbey in the Middle Ages, and Thorpe, Mousehold Heath, is public property. It sends two members to Parliament. Norwich is remarkable for the number of eminent men associated with it and as a centre of literature and art; they include Sir Thomas Browne and George Borrow in literature, and Crome in art. Coke and Nelson were educated in its grammar school. Others associated with the city include the Martineaus, the Gurneys, and Edith Cavell.

Norwich was founded by the Anglo-Saxon invaders of Britain, and in the 10th century or earlier was an important town. In 1094 the E. Anglican bishopric was brought here from Thetford, and about the same time the castle was built. Attached to the cathedral was a monastery. The citizens, growing rich, bought various charters giving them liberties and privi-

leges, and walls were built around the city. In the 14th century a staple for wool was fixed here, and Flemings settled here about the same time. Made a county of itself in 1404, the city became, owing to the wool and worsted industry, one of the richest in the country. It has been separately represented in Parliament since 1298. Pop. (1921) 120,653. See *Norwich*, A. Jessopp, 1884; Records of the City of Norwich, W. Hudson and J. C. Tingey, 1904-10; Norwich Cathedral, C. H. B. Quennell, 1898; *The Story of Norwich*, E. Henderson, 1911.

Norwich. City of Connecticut, U.S.A., and co. seat of New London co. It stands on the Thames river, at the head of navigation, 49 m. S.E. of Hartford, and is served by the New York, New

Our Lady, with orphanage, founded in 1848. The Royal Normal College and Academy of Music for the Blind was established at Upper Norwood in 1874. In the 17th century Norwood was covered by an oak wood; a spa,



Norwich, England. 1. Norwich and Norfolk Hospital.
2. Cattle market looking toward the Castle.
3. Church of St. Giles

Prith

Haven and Hartford and the Central Vermont rlys., and by steamers plying to New York and other ports. Norwich was settled in 1659, and received a city charter in 1784. Pop. 29,700.

Norwich, EARL OF. English title borne by the families of Denny and Goring, but now extinct. Sir Anthony Denny, one of the guardians of Edward VI, had a grandson, Sir Edward, who in 1626 was made earl of Norwich. Dying without sons in 1637, his title became extinct, but was given in 1644 to his nephew, George, Lord Goring, only to become extinct again when his son, the 2nd earl, died in 1671. See Goring, Lord.

Norwood. District of S.E. London. It forms the S. part of the bor. of Lambeth, is hilly, lies between Streatham W., Sydenham E., and Croydon S., and is chiefly residential. At West Norwood is the S. Metropolitan cemetery of about 40 acres, founded in 1846. To the W. of it is the Jews' Hospital, built 1863; it was founded at Mile End in 1806. Near to Norwood Park is the R.C. convent of

acres. See Gipsy Hill.

Norwood. City of Ohio, U.S.A., in Hamilton co. A N.E. residential suburb of Cincinnati, it is served by the Cincinnati, Lebanon and Northern, and the Baltimore and Ohio S.W. rlys. Manufactures include playing cards, bookcases, pianos, machinery, and furniture. Norwood was settled in 1789, incorporated in 1888, and chartered as a city in 1902. Pop. 25,000.

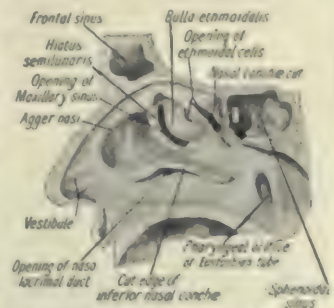
Nosari. Dist. and town of India, in Baroda. The dist. is crossed by the Tapti river. Fruits, sugar, grain, and cotton are produced. The town, which stands on the left bank of the Purna, 149 m. N. of Bombay, can be reached by small ships. It has a large colony of Parsees. Area, 1,914 sq. m. Pop., dist., 335,000; town, 18,000.

Nose. Organ of the sense of smell, also used in respiration. In human beings it forms a prominence, variable in size, situated in the middle line of the face. It ends below in the nostrils, which mark the entrance to the two nasal cavities between the base of the skull and the roof of the mouth.

The roof, sides, and floor of the cavities are formed of certain bones of the skull. The roof is composed of a bone perforated like a sieve to afford passage to the nerve of smell. The sides are each covered

by three highly vascular bodies (the turbinals) which moisten and warm the air passing through. When swollen, these bodies give rise to a stuffiness of the nose experienced by everyone suffering from a cold in the head. Several cavities are present in the bones adjoining the sides of the nose, and open into it by small holes. The floor runs straight back from the nostrils to the nasopharynx, parallel with the roof of the mouth. The two cavities are separated from one another by the septum, which is principally composed of cartilage.

The point of the nose is composed of cartilage covered by skin externally, and jointed to the bony framework of the rest of the nose, giving softness and mobility to the point. The nerve of smell breaks up into many branches, which end in the upper parts of the septum and sides of the nose. This region is therefore termed the olfactory region, or the part of the nose used



Nose. Sectional diagram showing lateral wall and principal parts of the organ

for smelling. The rest of the nose is supplied by nerves of common sensibility and is used for breathing. It is therefore termed the respiratory region of the nose.

The sense of smell varies much in different individuals, and in different animals. It is highly developed in herbivora and carnivora, the dog, for example, depending on the sense of smell almost as much as on the sense of sight. Taste and smell are intimately connected. Digestion is greatly assisted by the agreeable stimulation of both senses.

To avoid irritation of the throat and lungs all the air should be drawn through the nose in order that it may be warmed and moistened and rendered harmless to these important organs. See Adenoids; Anatomy; Head; Man; Smell.

Nosean or **NOSELITE**. In mineralogy, the name of a mineral consisting of the sulphates and silicates of sodium and aluminium. Named after K. W. Nose, a German chemist, it is grey, blue, or brown in colour, and is found in igneous rocks in Germany, etc.

Nose Dive. In aeronautics, the act of diving at a steep angle, approaching the vertical, nose first. It is a method of obtaining for a short while a greatly increased speed. An accidental nose dive is usually the effect of losing flying speed and hence support. The machine then puts its nose down and keeps it there until it regains flying speed. If this occurs close to the earth the machine may crash before it reaches a speed sufficient for it to be controlled. Pulling quickly out of a nose dive is one of the most dangerous manoeuvres in flying.

Nose-ornament. Object worn in or on the nose, usually by passing it or a subsidiary ring or hook through a perforation. Made of bone, shell, feather, quill, tooth, wood, pearl, or metal, sometimes engraved or jewelled, its purpose was originally amuletic.

Nose-pins, especially characteristic of Melanesia and Australia, are usually passed through the septum, the rite of piercing being sometimes completed by drawing a live snake through the perfora-

tion. Corpses with unpierced noses have the rite performed upon them, to avoid discomfot to the ghost in the afterworld.

Metal nose-rings, which may have antedated earrings in W. Asia, were adopted by the Hebrew people. Many O.T. references to rings concern nose-ornaments, as in Gen. 24. They were removed on the Sabbath. The khizam, worn by women in Cairo and among some Beduin tribes, is usually of brass, with red or blue glass beads. The practice drifted across Africa to Nyasaland and the Gambia; the Yorubaland Egba insert coral plugs in the left nostril. Nose-rings became especially developed in India, among both Hindu and Mahomedan women. Tattooing of the nose also occurs.

Nosology (Gr. *nosos*, disease; *logos*, science). Science which deals with the classification and nomenclature of diseases. No general system has been agreed upon by doctors for the classification and nomenclature of diseases, though many books have been published upon the subject. Consult Nomenclature of Diseases of the Royal College of Physicians, 4th ed. 1906, a compilation due to Dr. William Farr in 1837. This classification has been adopted with amendments by various countries. See Medicine.

Nossi-bé or **NOSSY-BÉ**. Island off the W. coast of Madagascar. Belonging to France, it is situated at the entrance to the Bay of Passandava. It is mountainous and volcanic. Its chief town, Hellville, named after Governor Hell, who took possession of the island in 1841, has an excellent harbour. The neighbouring islands are Nossi-Mitsiou, Nossi-Comba, Nossi-Sakatra, and Nossi-Faly. Area of Nossi-Bé, 115 sq. m. Pop. 28,700.

Nostalgia (Gr. *nostos*, return; *algos*, grief). Home sickness or longing to return to one's home or native country. It is a morbid mental condition, partially induced by imperfect adaptation to a new environment, and may develop into melancholia (*q.v.*).

Nostoc. Mucilaginous plants of the natural order Nostocaceae, of the division Protophyta, or simplest

plants. They are exceedingly fine filaments, consisting of a large number of minute cells attached in a single series, which under the microscope presents the appearance of a necklace of pearls or beads. One or more of these filaments, coiled or twisted, are enclosed in hyaline jelly, and these masses, varying from 0.2 mm. to an inch in diam., float on bog-pools, appear on gravel paths, damp soil, or on rotting timber. They are often tinted green, violet, or blue. Sometimes they inhabit the cells of higher plants. *N. edule* is utilised by the Chinese as a soup ingredient. *N. commune*, the common species, is in some districts known as falling stars.

Nosu. Aboriginal people in S.W. China. Occupying the mountain region where Yunnan, Szechwan, and Kweichow meet, they represent a stock of Tibetan origin and primitive culture, who spread E. into the plains, driving before them the earlier Yao. They resisted the Manchu domination until early in the 18th century, when they were thrust back into the uplands above the 6,000 ft. level. They maintain feudal institutions and animistic practices, and accord much social freedom to women. See China; Lolo; consult also In Unknown China, S. Pollard, 1921.

Notables. Prominent personages formerly convoked in extraordinary council by kings of France. Dating from the 14th century, the council was called in times of national emergency, but had no powers, being purely consultative. The two most famous occasions of its being called were in 1787, when Louis XVI appealed to the Notables for advice on the increasing difficulties of the monarchy, and was advised to convoke the States-General; and in 1788, when they were summoned to give advice on the representation of the Third Estate, and by their reactionary attitude deepened the public discontent and hastened the Revolution. See French Revolution; States-General.

Notary (Lat. *nota*, note). In England, originally an officer in the ecclesiastical courts. Notaries are still admitted by the archbishop of Canterbury through his representatives, but their duties are mainly secular. They serve an apprenticeship and pass an examination, and, in London, must belong to the Scriveners' Company. A notary attests or certifies documents, mainly in connexion with a failure to meet bills of exchange. There is a society of public notaries. In England a notary is usually a solicitor; in Scotland



Nose-ornament. Examples worn by different races of mankind. Left to right: Sudanese negress; Tamil girl; Papuan wearing tusks of a wild boar; native of Solomon Islands

he must be a law agent. There are notaries in Ireland and in some foreign countries. Among the Romans the notary originally was a slave or freedman employed as a shorthand reporter of proceedings in the senate and law courts.

Notation. Musical term, meaning the use of signs to represent musical sounds. Its evolution has been slow, and no system is perfect for all purposes. Three chief methods have been employed: (1) representing scale relations, as in the phonetic systems of the Hindus and Chinese, the old Greek systems, the modern Paris-Galin-Chev  figure notation, and the Tonic Sol-fa notation; (2) representing the fingering of certain instruments, known as tablature; (3) representing fixed pitch, as in the ordinary staff notation of modern W. Europe. Each of these methods of showing pitch is aided by time symbols of various kinds. *See* Musical Terms; Pitch; Stave; Tablature; Time; Tonic Sol-fa.

Notation. System of figures and signs used in arithmetic to denote numbers and operations. *See* Arithmetic.

Notes and Queries. London weekly paper established Nov. 3, 1849, by W. J. Thoms, to form a medium for the exchange of knowledge between literary men and others. Following Thoms, its editors have been John Doran (1872-78), H. F. Turle (1878-83), Joseph Knight (1883-1907), Vernon Rendall (1907-12), and J. C. Francis. A monthly journal during the Great War, it reverted to its weekly form in 1920, when it was purchased by The Times.

Notice. In English law, a term in frequent use, usually meaning knowledge of a fact. Sometimes, however, it merely means knowledge of some other fact, which ought to induce a careful and prudent man to make inquiry, from which inquiry he would probably have discovered the fact in question. In equity, a purchaser for value without notice of any defect in his vendor's title is always in a strong position. Thus if A has borrowed money from X on the deposit of his title deeds, and A, afterwards obtaining the deeds somehow from the lender, takes them and sells the property to B, as being unencumbered, B takes the property free from the charge. But if there was some fact or circumstance which ought to have put B on inquiry, and he did not choose to inquire, he may have to hold the property subject to X's loan. At common law, if the holder of a bill of exchange takes it with notice of any fraud in its inception or trans-

fer, he will have no better title to it than his transferor had—in other words, the negotiable character of the bill is affected.

Notification. In English law, the compulsory notification of specified infectious diseases by medical practitioners. The Infectious Diseases Notification Act of 1889 requires every medical prac-



Notornis. Specimen of the almost extinct bird of New Zealand

titioner to send to the medical officer of health for the district a certificate stating the name of any patient he is attending, situation of the building, and the infectious disease from which he is suffering.

The ministry of health has power to add to the diseases named in the Act, and the local sanitary authority may also extend the list within its area, either temporarily or permanently. At the present time the notifiable diseases are smallpox, cholera, diphtheria, membranous croup, erysipelas, scarlatina, scarlet fever, typhus, typhoid, enteric, relapsing, continued or puerperal fever, plague, cerebro-spinal fever, acute poliomyelitis, ophthalmia neonatorum, and encephalitis lethargica. Tuberculosis is also notifiable.

For the purposes of controlling as far as possible certain occupational diseases which tend to arise in certain forms of industry, the Factory and Workshop Acts, 1901-1911, require any medical practitioner attending on or called in to visit a patient whom he believes to be suffering from lead, phosphorus, arsenic, or mercury poisoning, or anthrax, contracted in any factory or workshop, to notify the case forthwith to the chief inspector of factories at the home office.

Noto. Town of Sicily, in the prov. of Syracuse. It stands 2 m. from the Mediterranean and 21 m. by rly. S.W. of Syracuse. It has some handsome palaces and an archaeological museum. There are prehistoric tombs, Greek cemeteries, and Christian catacombs. Trade is carried on in corn, oil, and wine. The present town was built

in 1703, ten years after the destruction by earthquake of the medieval city, which occupied the site of Notum, a Sikel city 5 m. to the N. Pop. 22,000.

Notochord (Gr. *notos*, back; *chord *, cord). In embryology, a cellular, cartilage-like rod, which appears in the embryo of vertebrates and forms the basis of the vertebral column. Except in the lowest forms of vertebrates it disappears after the embryo stage, and is replaced by the vertebral column. *See* Vertebrates.

Notornis. New Zealand bird nearly extinct. It belongs to the gallinule group. The best known species has greenish plumage on the back, with head, neck, and under parts purple. Its wings are rudimentary and it cannot fly, but is able to run with considerable speed. Living specimens were caught in 1849, 1851, 1879, and 1898.

No Treating Order. Drink restriction in Britain during the Great War. Early in the war complaints were made as to the excessive drinking in munition areas, and its harmful effect on the output of urgent supplies, also as to the injury to soldiers on leave by well-meaning persons treating them to alcoholic liquor. As part of the wider scheme to regulate the drink traffic the Central Control Board (Liquor Traffic) issued an order in Nov., 1915, prohibiting treating. No one could purchase in licensed premises or clubs an alcoholic drink for another person. Infringement of the order was punishable by a fine, and many prosecutions took place. The order remained in force until June, 1919. *See* Central Control Board; Liquor Control.

Notre Dame (Fr., Our Lady). In French ecclesiology, name for the Virgin Mary. Numerous churches are thus dedicated, in Paris and elsewhere, notably the cathedral, Notre Dame de Paris. Situated in the  le de la Cit , this cathedral stands on the site of a 7th century church of S.  tienne and of a church of Notre Dame rebuilt in the 9th century. Begun in 1163, and completed early in the 14th century, the existing building was converted into a Temple of Reason, 1793-94.

The building reopened in 1795 for divine worship, handed over to the R.C. Church in 1802, restored in 1845, and damaged by the Communards in 1871. A magnificent example of decorated Gothic architecture, its length is 390 ft. The two towers have quaint gargoyles on their balustrades, and are 226 ft. high. The fine sculptured fa ade was completed in 1240. The aisles are prolonged round the choir,



there are 37 chapels, and beautiful old glass in the rose windows of the transepts, between which rises the 315-ft. spire. See Apse; Paris.

Notre Dame Bay. Arm of the Atlantic Ocean, on the N. coast of Newfoundland. It

lies between Cape St. John and Fogo Island, a distance of 45 m.; the E. end contains an extensive archipelago in the Bay of Exploits.

Notre Dame de Lorette. Ridge of France, in the dept. of Pas-de-Calais. Rising sharply from Ablain-St. Nazaire, it runs about 6 m. E. and W., is about 590 ft. in height, and commands an extensive view over Arras, Lens, and the plain of the Lys. Its W. end near the Bois d'Olhain was occupied for a brief time by the Germans in 1914, but until 1915 they held and strongly fortified the E. spur, on which stood the chapel of Notre Dame de Lorette, from which the hill took its name. This height was stormed by the French May 9, 1915. The Allies gained the Lorette plateau as the result of the battle of Loos (*q.v.*). The foundation stone of the war memorial to be erected on the spot where the chapel formerly stood was laid by Pétain in June, 1921.

See Artois, Battle of; Carency; Souchez; Vinny; consult Wreck of War, J. A. Hamerton, 1918.

Notre Dame de Paris. Romance of medieval Paris by Victor Hugo, first published in 1831. Full of

she displaced 5,400 tons, had a speed of 25 knots, nine 6-in. guns, and two torpedo tubes.

Nottingham. City, parl. and co. borough, market town, and the co. town of Nottinghamshire, England. It stands on the N. bank of the Trent, 123 m. N.W. of London, and is served by the Midland, G.N., and G.C. Rlys., and also by Nottingham arms canals. Its area, since the extension of the boundaries in 1877, is 10,935 acres. It was made a city in 1897. Pop. (1921), 262,658.

The town probably originated in an Anglo-Saxon settlement. It was later a Danish burgh. It was soon recovered from the Danes, and Edward the Elder is said to have walled the town,



character, exciting incident, and vivid action, it ranks as one of its author's masterpieces of fiction. Quasimodo, the Hunchback of Notre Dame, and Esmeralda, the gypsy girl with her goat, Djali, are among the familiar figures of fiction.

Nottingham.

British light cruiser. She took part in the Dogger Bank (1915) and Jutland (1916) battles, and was torpedoed and sunk in the North Sea, Aug. 19, 1916, when 38 of her crew were lost. The Nottingham was of the Chatham (*q.v.*) class, to which the Birmingham, Sydney, and other vessels belong. Completed in 1914,



Nottingham. 1. Guildhall, headquarters of the municipal activities. 2. The castle, occupying the rocky site of the Norman fortress. 3. S. Mary's, the chief of the city's churches

Frith

to have built a bridge across the river, and to have erected a mint here. A castle was built on the site of the present structure by a follower of William I.

In the Middle Ages Nottingham was an important borough and its castle a regular royal residence. It received charters making it a



Notre Dame de Lorette, France. General view of the hill, with ruins of the church of Ablain-St. Nazaire in right foreground

corporate town and bestowing privileges upon its citizens. In 1446 it was made a county of itself, and at one time comprised two boroughs, one French and one other English, each with its own laws and customs. Here Isabella, queen of Edward II, was captured with her lover, Roger Mortimer. In 1442 Charles I set up the royal standard on a spot still known as Standard Hill, and the castle was held by Colonel Hutchinson throughout the Civil War.

The city's modern history is mainly that of its growth into a great manufacturing centre, although the riots of 1831, when the castle was destroyed, must not be forgotten. Its industrial development began at a very early date and the town soon had ironworks and foundries, from which issued the bell, Great Tom, afterwards hung in Lincoln Cathedral. Nottingham became an important seat of the stocking trade in the 18th century. James Hargreaves came to the town in 1769 with his spinning jenny, and in 1790 Arkwright put up his spinning-frame here.

Industries of the City

Lace-making, the modern industry for which Nottingham is famous, is the direct natural descendant of the older stocking-making trade, as the first lace was made here on a stocking frame in 1700. The lace is made in factories in the adjoining districts as well as in the city itself, being finished in the warehouses of the city. Connected with this industry are many bleaching and dyeing establishments, and there are works for the manufacture of lace machines. A modern offshoot of the lace trade is the making of mousses, apone, underwear, etc., and veilings and embroideries are manufactured, men's and boys' clothing is made, while the making of hosiery is another important industry. There are a number of engineering works, the output of cycles being great, large tanneries and tobacco factories, while soap and drugs are other products. Other industries are brewing, making, cotton spinning, box-making, lithographic colour printing, and brickmaking. There is a transit trade along the river, and the city has cattle markets. Goose Fair, held annually in Oct., is an ancient institution.

A feature of Nottingham is its immense open market place, in the centre of the city. Around it are some old and narrow streets and buildings, but others have been replaced by wide modern thoroughfares—such as King and Queen Streets. The chief church is S.

Mary's, a fine Perpendicular structure of the 15th century; S. Peter and S. Nicholas are old foundations; the others are modern. The R.C. cathedral of S. Barnabas is a noble building, and the Non-conformists have many places of worship. In 1921 Sir James Ross gave £300,000 to defray the cost of a new road.

Principal Buildings

The castle, acquired and rebuilt by the corporation after 1831, is now an art gallery. In its grounds is a statue to Capt. Albert Ball, V.C. The University College is a fine pile of buildings. The Guildhall, a modern edifice, is the headquarters of the city's official business. The Albert, Victoria, and Mechanics' Halls are large public buildings. A new and spacious cattle market has replaced the older one, Victoria station (G.N. & G.C.R.) and that of the Mid. Rly. are prominent features. The city contains numerous open spaces, e.g. the Forest and the Arboretum. In Bulwell Forest and Bulwell Hall Park on the outskirts are two municipal golf links. Along the riverbank is an embankment and there are several parks.

The city is governed by a mayor, aldermen, and council, consisting of aldermen and councillors from the 16 wards. They own and manage the supply of water, gas, and electric light, and also the service of electric tramways. They replaced the old corporation in 1834. The city has a recorder, who holds here courts of quarter sessions, and is an ex-officio member of the House of Commons. It sends four members to Parliament, and has two daily papers, *The Guardian* and *The Journal*; also two evening papers. Pop. (1921) 282,455. See Barrie, J. M.; consult also Nottingham, E. L. Guilford, 1929.

Nottingham, East of England took form by several families. The first earls were the officials who ruled the county on behalf of the Norman kings. As an hereditary honour it began in 1377, when Richard II made John Mowbray earl of Nottingham. The next earl was his brother Thomas, afterwards duke of Norfolk, and the title remained in the family until its extinction in 1475.

In 1598 the earman, Charles Howard, known as Lord Howard of Effingham, was made earl of Nottingham. The title again became extinct on the death of his grandson, the 3rd holder, in 1691. In the same year it was revived for Henneage Finch (1621-82), a successful lawyer, who became lord chancellor. His son Daniel (1647-1730), the 2nd earl, was secretary of state under William III and Anne.

In 1729 he succeeded to the earldom of Winchelsea, and his son and other descendants have styled themselves earl of Winchelsea and Nottingham. The earl's eldest son is called Viscount Mandeville.

Nottingham, CHARLES HOWARD, EARL OF (1826-1924). English sailor. The eldest son of Lord Howard



Charles Howard,
Earl of Nottingham
After C. Jackson

of Effingham, lord high admiral of England, and first cousin to Anne Boleyn, he served at sea as youth, and after Elizabeth's accession occupied several court appointments before he became lord high admiral in 1585. A gallant and able sailor, he was in command when the *Armada* (p. 2) appeared and was largely responsible for its defeat. In 1598 he and Essex sailed to Cadix and sacked the town, and on his return he was created earl of Nottingham. In 1599 he was given command of all the sea and land forces. He died at Caydon, Dec. 14, 1624, and was buried at Reigate.

Nottingham, HENNEAGE FINCH, EARL OF (1621-82). English politician. Born Dec. 23, 1621, the son of Sir Henneage Finch,



Henneage Finch,
Earl of Nottingham
After Leys

Speaker of the House of Commons, he was educated at Westminster and Christ Church, Oxford, and called to the bar in 1645. Entering Parliament in 1660, he was made solicitor-general, and in 1674 lord chancellor and a baron. Created an earl in 1681, he died Dec. 18, 1682.

Nottingham, DANIEL FINCH, EARL OF (1647-1730). English politician. Son of Henneage Finch,



Daniel Finch,
Earl of Nottingham.
English politician
After Kneller

earl of Nottingham, he early entered public life, and rose to high office, becoming a peer, a privy councillor and a lord of the admiralty, and was one of James II's warmest supporters until alienated by that monarch's ecclesiastical policy. He took no part in bringing about

the Revolution, but in 1690 was one of the council chosen to assist Queen Mary during the king's absence in Ireland. At George's accession Nottingham was made president of the council, but he lost favour in 1716. He died Jan. 1, 1730.

Nottingham Forest. Football club playing the Association game. It originated about 1865 in Nottingham, England, being named from the Forest, the open space where its earliest games were played. It secured capable players, and in 1879 was in the semi-final for the Association Cup. At that time it was an amateur organization, but it soon became mainly a professional one. A new ground was acquired, and a company formed to work the club. In 1898 the Forest won the Association Cup. See Football.

Nottinghamshire. County of England. Wholly inland, its area is 844 sq. m. It is in the main a level region, much of it being the valley of the Trent, but there are wolds in the S. and some hills in the W. The chief river is the Trent; others are its tributaries, the Idle and the

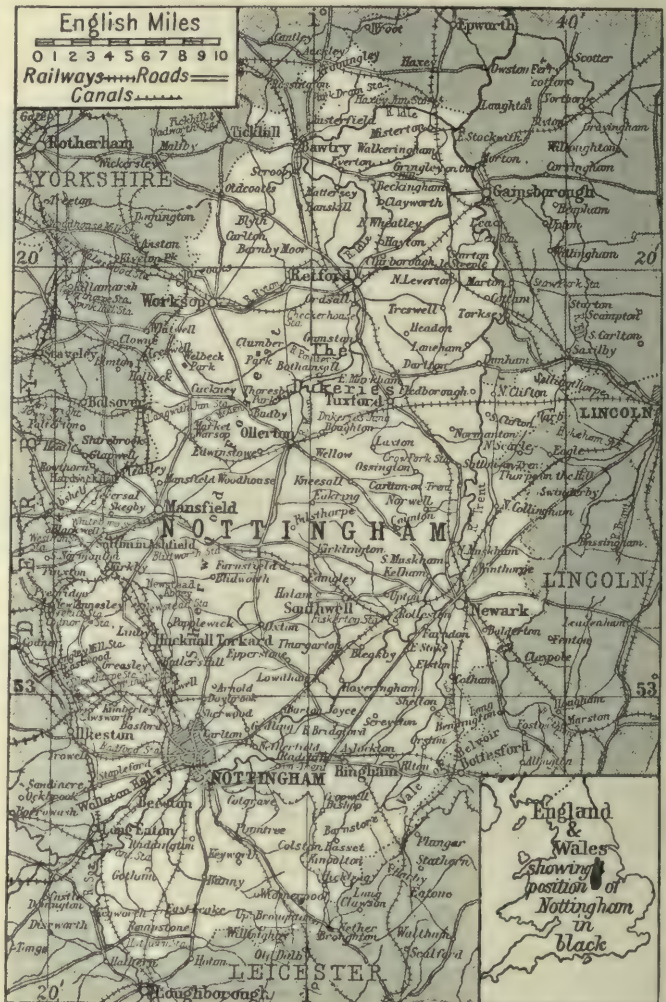


Nottinghamshire
ARMS

Erewash, which separates the county from Derbyshire.

The county may be divided roughly into a coal-mining and industrial area in the S. and S.W., and an agricultural one in the N.E. and S.E. Barley and oats are grown; sheep and cattle are reared. A large quantity of coal is produced; lace and hosiery are made; and there are engineering works of various kinds. It is served by the Mid., L. & N.W., G.C., and G.N. Rlys., and by several canals. In the county are the remains of Sherwood Forest, including the district known as the Dukeries (*q.v.*). Other places of interest are Cresswell Crag, where traces of primitive man have been found, and the fine houses of Welbeck, Thoresby, Clumber, Newstead, and Wollaton. Nottingham is the county town; other boroughs are Mansfield, Newark, and Retford. Five members are returned to Parliament. Nottinghamshire is mainly in the diocese of Southwell. It has long been famous for its cricketers, and is a hunting centre.

Before the Norman Conquest, Nottinghamshire was part of Mercia. It passed under the control of the Danes, and there are traces of Danish settlements. In the 16th century hosiery making was intro-



Nottinghamshire. Map of the industrial and agricultural county of the English Midlands

duced, while coal was mined at an earlier date. There are remains of monasteries at Newstead, Thurgarton, and elsewhere. Pop. 641,134.

LITERARY ASSOCIATIONS. The most prominent literary figure associated with the county is Lord Byron, who passed much of his early life at Southwell and Newstead, and is buried at Hucknall Torkard. Other poets of the county are Henry Kirke White and Philip James Bailey, both of whom were born at Nottingham. Thomas Cranmer was born at Aslockton, and Erasmus Darwin at Elston Hall. In the literature of legend the county has Gotham (*q.v.*) and Sherwood Forest, background to the ballads and other literature concerning Robin Hood, and also to the ballad of The King and the Miller of Mansfield.

Bibliography. Annals of N., T. Bailey, 1853; History of N., C. Brown, 1891; Bygone N., W. Stevenson, 1893; Victoria History of the Counties of England, Nottinghamshire, ed. W. Page, 1906; Memorials of Old N., E. L. Guilford, 1912.

Nottinghamshire and Derbyshire Regiment, THE. Official name of the British regiment more usually known as The Sherwood Foresters (*q.v.*).

Notting Hill. London district. Part of the bor. of Kensington, it is N. of Holland Park, with Bayswater E. and Shepherds Bush, W. At Notting Hill Gate was an old turnpike, removed in 1860; near the Met. Rly. station is the Coronet Theatre, built 1898, later a cinema. On the rising ground of Ladbrooke Grove, known in 1820 as Notting Hill Farm, is S. John's Church, built 1842. The farm was suc-

ceeded, 1837-41, by a racecourse, recalled by the name of Hippodrome Place. The district, built over 1828-48, was named from the manor of Knotting or Nutting Barnes, owned by John de Vere, earl of Oxford in the time of Edward IV. See Old Kew, Chiswick, and Kensington, L. C. Sanders, 1910.

Notts. Abbrev. for Nottinghamshire, England. Notts County is the name of a leading Association football club. Founded about 1862, it soon became a professional organization. The ground is in the city of Nottingham. In 1894 the club won the Association Cup, and except for one or two years it has been a member of the Football League since its inception in 1888.

Noumenon (Gr. *no-oumenon*, anything thought). Object of pure thought, opposed to phenomenon, the object of sensation. Kant further distinguishes the object known by the mind from the noumenon, which can be conceived but not known. The object is relative to intelligence generally; the noumenon is relative to nothing—it is the thing-in-itself, not the thing as we see it. *Pron.* No-oumenon.

Noun (Lat. *nomen*, name). In grammar, a word denoting a person or thing (noun substantive), or a quality (noun adjective). The term substantive (*substantivus*, self-existent) is due to the grammarians of the Middle Ages. Nouns substantive may be divided into abstract, expressing an attribute of a person or thing (virtue, beauty); concrete, designating real persons or things, to which such attributes belong; concrete nouns being further divided into proper, distinguishing any particular living being or inanimate object from others of the same kind (Henry, London); common, embracing all persons or things belonging to the same class (man, dog, house); collective, designating a collection of persons or things regarded as forming a whole (army, multitude, heap); partitive, indicating a part, variable in amount, of a collective whole. See Name.

Nouvelle Revue, La. French review, republican in policy, published in Paris on the 1st and 15th of each month. It was founded Oct. 1, 1879, by Mme. Juliette Adam, and from the first addressed itself to growing talent, to the practical rather than the theoretical consideration of literature and the drama, contemporary history, political economy, commerce, finance, and education. See Adam, J.

Nová Bána. Town in the Slovakia division of the Czechoslovak republic, formerly known as Újbánya (*q.v.*).

Novaculite (Lat. *novacula*, razor). In geology, name given to a fine-grained rock consisting of small quartz particles. Several varieties of novaculite are used as hones (*q.v.*).

Nova Geminorum I and II. Name given to two new stars in the constellation of Gemini. The first was discovered on a photograph taken at Oxford, March 16, 1903, and the second early in 1912 at Dombaas in Norway. The latter was a star of the 11th magnitude, when it suddenly blazed in two days into one of the 3rd magnitude. From spectroscopic analysis it is probable that the sudden increase in brightness was due to a collision between the star and a dark nebula. Consult *The Spectrum of Nova Geminorum II*, F. J. M. Stratton, 1921.

Novaja Zemlia. Archipelago of the Arctic Ocean, belonging to Russia. It stretches N.N.E. between Barents Sea on the W. and Kara Sea on the E., and is separated from Waigats Island by Burroughs Strait. It is composed mainly of two large islands, divided by the Matochkin Shar or Matthew Strait; that to the S. is called Goose Land (*q.v.*), while the N. island is divided into Barents Land in the N., Lutkes Land in the centre, and Matthews Land in the S. A large number of small islands, mainly off the E. coast, combine to make the archipelago. The total land area is estimated at 35,150 sq. m.

Novalis (1772-1801). Pseudonym of Friedrich Ludwig von Hardenberg, German writer. He

was born May 2, 1772, at Wiedersiedt, Prussia, and studied philosophy at Jena and law at Leipzig and Wittenberg, where he graduated in 1794. In the following year he fell in love with the beautiful Sophie von Kühn, whose



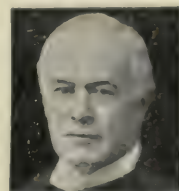
Novalis,
German writer

death in 1797, at the age of 15, proved a great blow to him. In 1800 he was at Freiburg, studying mineralogy, when pulmonary consumption declared itself, and he died at Weissenfels, March 25, 1801.

His *Hymnen an die Nacht* (Hymns to the Night), 1800, written after

he lost his betrothed, breathe a lofty spirituality. Apart from romantic philosophical fragments and those hymns, his chief work is a great unfinished romance, *Heinrich von Ofterdingen*, in which the symbolism of the pursuit of the blue flower by the hero is an interesting precursor of Maeterlinck's *Blue Bird*. His works were edited by L. Tieck and F. Schlegel, 1802. His correspondence was published in 1880. See *Miscellaneous Essays*, T. Carlyle, vol. 2, 1829; F. von Hardenberg, J. Bing, 1899; *Novalis der Romantiker*, E. Heilborn, 1901.

Novar, RONALD CRAUFURD MUNRO-FERGUSON, VISCOUNT (b. 1860). British administrator. The son of



Ronald Munro-
Ferguson,
Viscount Novar
Russell

Col. R. Munro-Ferguson of Raith, Fifeshire, he was educated at Sandhurst, and, after a term in the Grenadier Guards, entered the House of Commons as Liberal M.P. for Ross and Cromarty in 1884. He lost his seat in 1885, and in 1886 was returned for the Leith Burghs, a constituency he represented until 1914. In 1894-95 he was for a short time a lord of the treasury. A privy councillor since 1910, Munro-Ferguson was governor-general of Australia from 1914 to 1920, in Dec. of which year he was made Viscount Novar. He was Secretary for Scotland, 1922-24.

Novara. Frontier prov. of Italy, in Piedmont. It is bounded N. by Switzerland, S. by Alessandria, W. by Turin, and E. by Como, Milan, and Pavia. Its area is 2,548 sq. m. Pop. 768,700.

Novara. City of Italy, capital of the prov. of Novara. Situated on an eminence between the rivers Terdoppio and Agogna, it is a junction 31 m. by rly. W. of Milan. Among its many handsome edifices are the Romanesque cathedral, dating from the 4th century, with



Novara, Italy. Dome of S. Gaudenzio, 397 ft. high, and part of the cathedral, right centre, seen from the Largo Bellini

a 10th century baptistry and old frescoes; the church of San Gaudenzio, founded in the 5th century and rebuilt in 1570; an ancient citadel, now used as a prison; and a museum with many Roman antiquities. Its rectangular streets recall its Roman occupation. The old fortifications have been replaced by boulevards. The chief industry is the manufacture of textiles. Pop. 58,900.

Novara, BATTLE OF. Austrian victory over the Piedmontese, March 23, 1849. The armistice which followed the Austrian victory of Custoza, 1848, was succeeded by protracted and futile negotiations between England, France, Austria, and Piedmont. Wearied of a state of affairs in which the only certainty was the daily strengthening of Austria, Charles Albert denounced the armistice, March 12, 1849, whereupon Radetzky made a rapid march into Piedmont and attacked the Italians at Novara, March 23, 1849. Charles Albert's defeat was so overwhelming that he abdicated in favour of his son, Victor Emmanuel II.

Novarsenobenzol OR NEOSALVARSAN. Organic compound of arsenic administered in cases of syphilis, sleeping sickness, and relapsing fever. It is given by injection either into the veins or into the muscles, and acts as a poison to the spirochaetes or trypanosomes of the diseases.

Nova Scotia. One of the three maritime provinces of Canada. Its area is 21,428 sq. m., of which 360 sq. m. are water, and its population 492,338, of whom 144,991 are R.C.

The province consists of two parts. The larger is the peninsula of Nova Scotia, surrounded by the sea except where the isthmus of Chignecto, only 11½ m. wide, unites it to New Brunswick. The smaller is the island of Cape Breton to the N., the strait of Canso lying between the



Nova Scotia arms

two. The coast-line is very indented, and has many openings. Minas Basin is the deepest indentation, while Halifax and Sydney in Cape Breton have the finest harbours. There are a number of lakes, including Rossignol in Nova Scotia, and the Bras d'Or lakes in Cape Breton. Many small islands lie off the coast.

Halifax is the capital, the chief port, and the largest city. Sydney, on Cape Breton, a mining centre, is the next in size. The prov. sends 16 members to the Dominion House of Commons and 10 to the Senate. Its local affairs are looked after by a parliament of two Houses; a legislative council of 21 nominated members and a House of Assembly of 43 elected ones. Elections are held every five years. There is a ministry responsible to the parliament and a lieutenant-governor represents the crown.

Nova Scotia is mainly an agricultural area. Dairy produce and fruit are the chief products, the apples of the fertile Annapolis valley being specially famous. Oats and potatoes are also largely grown. There is a good deal of

forest land and much timber is felled. Cape Breton has a rich coal-field, and in Nova Scotia coal, iron, gold, copper, etc., are mined. The fisheries are valuable, chief among them being cod, lobster, and mackerel; trout and salmon are caught in the rivers. The prov. is well served by rlys., which converge on Halifax.

Nova Scotia was first taken possession of by the French, who named it Acadia. In 1613 the French settlers were ousted by the English, and in 1621 James I bestowed it upon a Scotsman, Sir William Alexander, to which fact it owes its name of Nova Scotia. It was given back to France in 1632, and again in 1667, after it had been taken by Cromwell. Port Royal, the later Annapolis, was then the capital.

The long struggle between England and France for the possession of America was partly fought out here; in 1710 Great Britain again seized Nova Scotia, keeping it by the treaty of 1713, but Cape Breton remained French. At this time Nova Scotia included New Brunswick and Prince Edward Island, although its W. boundary was very uncertain. On Cape Breton the French built the strong fortress of Louisbourg, which was twice captured by the British. Once, in 1748, it was restored, but the second time it, and with it Cape Breton, was retained, and it be-



Nova Scotia. Map of the Canadian maritime province, containing Halifax, the winter port of entry from the Atlantic

came formally British at the peace of Paris in 1763.

From Nova Scotia itself the British, in 1755, had expelled the French settlers, known as the Acadians, and during the Seven Years' War the French vainly attempted to recover the region. After the British victory in 1763 New Brunswick and Prince Edward Island were separated from the colony of Nova Scotia.

In 1867 Nova Scotia became one of the four provinces of the

Dominion of Canada. It had had representative institutions since 1758, but their corollary, responsible government, was only secured about this time, primarily owing to the work of Joseph Howe. The union effected, there was a strong agitation for withdrawal, but financial concessions were made, the Inter-colonial Rly., part of the bargain, was completed, and the movement gradually died away. Woman franchise was passed into law in 1918. Tercentenary celebrations took place at Annapolis in 1921. See Canada; Canso, Cape; consult also Stanford's Compendium of Geography and Travel, Canada and Newfoundland, ed. H. M. Ami, 2nd ed. 1915.

Novatianism. Schism which arose in the Christian Church in the 3rd century. It was named after Novatian, a presbyter of Rome, who was joined by Novatus of Carthage. Its adherents called themselves Cathari (*q.v.*) and separated from the Church as a protest against the laxity of the Roman clergy in receiving the lapsed to penance. Novatian is described as the first anti-pope, and he instituted a succession of schismatic bishops which existed for nearly 300 years. The Novatians denied that the Church could reconcile those who had fallen after baptism into deadly sin, and they re-baptized those who joined them. See Dict. of Sects, J. H. Blunt, 1903; Catholic Encyclopedia, 1907-12.

Novation (Lat. *novatio*, making new). In law, the substitution of one legal obligation for another. The situation constantly arises in the case of a change of partners in a firm. Thus if A and B are partners, under the title of A and Co., and have dealings with X, and B retires from the firm and C comes into it; and X, with knowledge of the change, goes on dealing with A and Co., he is deemed to accept A and C as his debtors (or creditors) instead of A and B.

Nová Ves. Town in the Slovakia division of Czecho-Slovakia, also known as Igló (*q.v.*).

Novel. Work of fiction written in prose and presenting dramatically the interplay of human emotions upon a stage of real life. It is as the news of common life that the novel differs from the romance, which embodies the legend of heroic times. Every age finds the medium best suited to the expression of its own genius, and it seems to be true that among every people the novel is the latest form of imaginative literature.

Among the Greeks the epic came first, followed by the drama, with

its choric and lyrical concomitants, and only at a very long interval by anything notable in the shape of prose fiction. Very considerable extension must be made of the term novel before it can be applied with justice to the *Cyropaedia* of Xenophon, and Plato's *Atlantis*, admittedly the prototype of many works of fiction, forfeits the right to be classified as a novel, part at least of the function of which is to amuse, by its primary didactic purpose. It is not until the time of Longus, Lucius of Patrae, the Syrian Iamblichus, Achilles Tatius of Alexandria, and Heliodorus of Emesa that the novel appears with all its modern essentials of complicated plot, diverse and dramatic incident, and, in most cases, a strong love interest.

When Europe awakened from its long sleep through the Dark Ages the romance appeared, the 14th century delighting in the exploits of Charlemagne and the legends of Arthur, Alexander, and Troy, which in the hands of Malory, Caxton, and Berners furnished the stuff of which English prose fiction was first made. But these could not long continue to satisfy the growing intellectual activity of a world awake; so, in England, the Elizabethan age found its expression in the drama, the age of Anne in the poem in heroic couplets, and the age of Victoria in the novel.

Origin of the Novel

The origin of the novel, like the origin of the word, was Italian. The short, racy *fabliau* of France was appropriated and perfected by Italian genius of the Cinquecento, and as the *novella* of Boccaccio, Masuccio, Ser Giovanni, and the other *novellieri* was carried on the tide of the Renaissance all over Europe. The pregnant fact about these early *novelle* is, as Masuccio protests in the Prologue to his *Novellino*, that they were true and contain only what their authors had learnt by the evidence of their own senses. It was a true picture of life as they saw it, with what purpose is relatively unimportant. Masuccio, in 1476, when the first edition of his book was printed, provided precisely the same bill of fare that Fielding provided in Tom Jones in 1749—"no other than human nature."

Truth to the facts of life, then, is the first distinguishing note of the novel. But there is more to it than that. "I have purposely dwelt upon the romantic side of familiar things," said Dickens in the preface to *Bleak House*, thereby indicating the essential charac-

teristic and the most powerful dynamic of the novel. That characteristic is sympathy, enthusiasm of humanity, as Professor Seeley called it, power to pity the sufferings of others and to understand their souls, reverent recognition of man's individuality, and perception of his relation, with duties and responsibilities, to others.

Qualities of English Fiction

The dynamic lies in the irradiation of common workaday life by a glimpse of the light above. Sight is indispensable to the novelist, but the great novelist must have vision as well. In the 150 years that were the flowering time of English prose fiction, between the publication of Fielding's first novel and Meredith's and Hardy's last, the novel has been adapted to an infinity of different shapes, domestic, sentimental, realistic, philosophical, didactic, propagandist. But all great novels have this in common, that they are an interpretation as well as a presentation of life, that they view things temporal against a background of things eternal, and that they are an attempt to reconcile the known with the unknown. See English Language and Literature; France: Literature; Romance; also Dickens; Fielding; Meredith; Scott, etc.; consult also History of Fiction, J. C. Dunlop, new ed. rev. H. Wilson, 1888; The English Novel, Sir W. Raleigh, 5th ed. 1903.

Novello, VINCENT (1781-1861). British composer. Born in London, Sept. 6, 1781, of mixed Italian and



V. Novello.

English parentage, he became a chorister in the Sardinian Chapel and later an organist. He was a founder of the London Philharmonic Society, composed church music, masses, etc., and edited collections of sacred music. The publication of these by himself was the beginning of the business of Novello & Co., actually founded by his son Joseph in 1811. He died Aug. 11, 1861.

November. Eleventh month of the Christian calendar, the ninth in the old Roman calendar, whence its name from Lat. *novem*, nine. The Anglo-Saxons called it Wind-monath, and also Blód-monath (blood month), from the practice of slaughtering cattle during this month to be salted for the winter. See Calendar.

Nové Mesto. Town of Czechoslovakia, formerly in Hungary and known as Sátorajújhely (*q.v.*).

Nové Zámky. Town of Czechoslovakia, formerly in Hungary and known as Ersekújvár (*q.v.*).

Novgorod. Government of Russia. The govt. of Petrograd is on the W., Olonets N., Vologda N.E., Yaroslavl E., Tver S.E., and Pskov S.W. In the S. are the Valdai hills, the highest land in European Russia. The N.W. drains to Lake Ladoga, the S.E. to the Volga. Two main line rlys. from Petrograd cross the govt., which has a trade in grain and timber. Area, 45,770 sq. m. Pop. 1,729,300.

Novgorod. Town of Russia, called Veliki, or the Great. Capital of the govt. of the same name, it stands on the river Volkhov, and the Novgorod Rly., 100 m. S.E. of Petrograd. Its features include the Kremlin or citadel, cathedral of S. Sophia, palace of Catherine II, and a monument, celebrating the expulsion of the French in 1812. There are tanneries and candleworks, and a trade in grain, timber, salt, and iron. In 862 Novgorod was the capital of the Scandinavian chief, Rurik (*q.v.*), and it remained the Russian capital until displaced by Kiev. In the 12th century it was the capital of a great republic, but in 1478 came into the power of Moscow and remained so until almost destroyed by Ivan the Terrible in 1570. Pop. 27,000.

Novgorod - Syeversk. Town of Central Russia. It is in the government, and 100 m. N.E., of Chernigov, on the river Desna and the Novozibkov Rly. It has a trade in wheat, hemp, and timber. In the 11th century it was the capital of the independent principality of Severia. Pop. 13,000.

Novi OR **NOVI** FIGURE. Town of Italy, in the prov. of Alessandria, Piedmont. It is a junction 14 m. by rly. S.E. of Alessandria. Silk weaving is the chief industry. Here on Aug. 15, 1799, the combined Russians and Austrians defeated the French, who lost their general, Joubert, and 10,000 men. The French were victorious in the same locality on Nov. 6 of the same year. Pop. 18,000.



Olga Novikoff,
Russian writer
Hoppt

Novikoff, OLGA (1840-1925). Russian writer. Born in Moscow, her maiden name was Kiréeff, and over the signature O. K.

she wrote much in defence of the Slavonic cause and in furtherance of Anglo-Russian friendship. She married General Novikoff when she was 19. Among her works are: *Is Russia Wrong?*; *Friends or Foes*; *Russia and England*; *Skobelev and the Slavonic Cause*; *Russian Memories*; *Searchlights on Russia*. She died April 21, 1925. See The M.P. for Russia, *Reminiscences and Correspondence of Madame Olga Novikoff*, ed. by W. T. Stead, 1909.

Novi Pazar, NOVI BAZAR, OR YENIPASAR. Town of Yugo-Slavia, in S.W. Serbia. Situated on the



Novi Pazar, Yugo-Slavia. Metropolitan church of Petrovna, famous in Serbian history

Rashka, a tributary of the Ibar, it is about 130 m. S.W. of Belgrade, and is strategically important as a road junction. It frequently figured in Serbian history in the Middle Ages. Under the Turks it was fortified, and the chief town of the sanjak of Novi Pazar, part of the vilayet of Kossovo. After the treaty of Berlin, 1878, the sanjak was garrisoned by Austrian troops, and held until 1908, when Austria annexed Bosnia-Herzegovina, but retired from the sanjak. During the first Balkan War the town and sanjak were occupied by the Serbo-Montenegrins, and as the result of these two wars the sanjak was divided between Serbia and Montenegro in 1913. During the Great War. Novi Pazar was taken and the sanjak overrun by the Austrians in Oct.-Nov., 1915; the Serbs regained the lost ground in Oct., 1918. Pop. 13,500.

Novocaine. Local anaesthetic. A para-amino-benzoyldiethyl-amino-ethanol hydrochloride it is made in several British chemical manufactories, although before

1914 it was exclusively a German product. Novocaine is used in surgery in a similar manner to cocaine, being employed in the form of a one p.c. solution as a local anaesthetic, particularly in tooth extraction. See *Anaesthetics*.

Novo-Georgievsk. Town of S. Russia. It is in the govt. of Khereson, on the Tasmin, 20 m. W. of Kremenchug. Soap, leather, candles, and tallow are made, and there is a trade in timber and cattle. The town was formerly known as Krylov and then as Alexandriya; it has borne its present name for about a century. Pop. 11,000.

Novo - Georgievsk OR **MODLIN.** Fortress of Poland, also known as *Novy Dwor*. It is in the govt., and 50 m. S.E., of Plock. Its importance is due to its position 10 m. N.W. of Warsaw at the confluence of the Vistula and the Bug on the Kovel-Mlava rly. The fortress was constructed by

Napoleon in 1807.

Novo-Georgievsk, CAPTURE OF. German success in the Great War, Aug., 1915. In their attack on the line of the Nareff in August, 1915, the Germans, under Gallwitz, forced a passage across the Bug on August 7 a short distance above Novo-Georgievsk, and surrounded the fortress within the next two days. The garrison made a stubborn defence with the object of holding up the Germans in that area and depriving them as long as possible of the rly. communications. The Germans, however, brought up powerful siege artillery, and the fortifications were battered down in ten days, the fortress falling on August 19. See *Nareff, Battle of the*.



Novo-Georgievsk, Poland. Southern gateway of the fortress built by Napoleon in 1807

Novo Rossisk. Town and port of the Caucasus. It stands on the N.E. shore of the Black Sea and the Vladikavkas rly., 60 m. S.W. of Ekaterinodar. It is much used for shipping petroleum, and export trade is done in wheat, barley, rye, maize, and linseed. Pop. 61,000.

Novo-Tcherkask. Town of S. Russia and the capital of the Don Cossack territory. It is 25 m. N.E. of Rostov, on the Koslov-Rostov rly. There is trade in corn, wine, and timber, and important anthracite beds about 20 m. north. The Don Museum contains Cossack banners, trophies, and the sceptre with which the hetman has been invested since the time of Catherine II. Pop. 67,000.

Novoye Vremya (NEW TIMES). Russian daily newspaper published in Petrograd. Under the editorship of A. S. Suvorin it became the most widely circulated and profitable political paper in pre-revolutionary Russia. The Russian satirical writer Saltikov (Shchedrin) nicknamed it *As You Like It*, a tribute to its reflection of the views of changing ministries, its one dominant note before the establishment of the Duma being anti-Semitism, which was modified later, as was its conservatism, in favour of a moderate constitutionalism.

Novozibkov. Town of Central Russia. It is in the govt., and 80 m. N.E., of Chernigov. and is

Nowgong. Dist. and town of Assam, India. The dist. lies S. of the Brahmaputra. Although almost the whole area is cultivable, less than one-tenth is tilled, rice and oil seeds being the chief crop. The town is on the Kalang, a left-bank tributary of the Brahmaputra. The area of the dist. is 3,843 sq. m. Pop., dist., 304,000; town, 5,400.

Nowra. Town in St. Vincent co., New South Wales, Australia. It is the terminus of the coast rly., 94 m. in length, S. from Sydney, at the mouth of the Shoalhaven river. Pop. 1,900.

Noya. Town of Spain, in the prov. of Corunna. It stands at the mouth of Tambre river at the head of Muros y Noya Bay, 21 m. W. of Santiago de Compostella. Ship-building and fishing are the leading occupations, and there are manufactures of lace, linen, soap, and paper. Pop. 10,000.

Noyau (Fr., kernel). Liqueur made from the kernels of peach-stones or bitter almonds, brandy, and sugar. Either white or pink, it is a cordial and used for flavouring in cookery. It is made in Martinique, and exported from Bordeaux.

Noyes, ALFRED (b. 1880). British poet. Born Sept. 16, 1880, he was educated at Exeter College, Oxford, and published his first book of verse, *The Loom of Years*, 1902. It was followed by others which showed the easy flow of his coloured and resonant verse: *Drake, an English Epic*, 1906; *Forty Singing Seamen*, 1907.

He published a study of William Morris, 1908. Later works have included *Tales of the Mermaid Tavern*, 1912; *The Wine Press*, 1913; *A Salute from the Fleet*, 1915; *The Elfin Artist*, 1920; and he edited several anthologies. He lectured at the Lowell Institute, Boston, U.S.A., in 1913, and was appointed visiting professor of English literature at Princeton University, 1914.

Noyon. City of France, in the dept. of Oise. It stands on the Verre, near its junction with the Oise, 67 m. from Paris. It is famous for its cathedral of Notre Dame, and as the birthplace of Calvin. The cathedral is a Transition building with a



Noyon arms

harmonious and beautiful exterior, although the two W. towers are unfinished. Noyon existed in Roman times, and was made a bishopric before 600. It was one of the Frankish capitals, and here the Frankish kings at times held court, but from about 900 to the Revolution was only important as one of the great French bishoprics. Noyon is familiar to readers of Robert Louis Stevenson's *Inland Voyage*. Pop. 7,400.

Noyon was reoccupied by the



Alfred Noyes,
British poet



situated at the confluence of the rivers Zibka and Karna on the Zhabinka-Bryansk rly. There are tallow boileries, tanneries, sugar and match factories, and a trade in wax and honey. The inhabitants are chiefly Raskolniki (dissenters). Pop. 22,000.

Nowgong. Town and cantonment of Bundelkhand, Central India. It is situated between the British dist. of Hamirpur and the native state of Chhatarpur. Rajkumar College, for the education of the sons of native chiefs, founded by the chiefs of Bundelkhand in memory of Lord Mayo, was opened in 1875. Pop. 12,000.



Noyon, France. West towers and triple porch of the cathedral of Notre Dame, before the Great War. Top, left, ruins of the cathedral after the bombardment, from the south

French on March 18, 1917, after the retreat from the Somme of the Germans, who mined its streets. Regained by the Germans in March, 1918, it was finally recovered by the French under Gen. Humbert, Aug. 29, 1918. It was almost completely destroyed in the various bombardments, and the cathedral was set on fire.

N.R.A. Abbrev. for National Rifle Association. See Rifle Association, National.

N.S. In aeronautics, an abbrev. of North Sea, the type name of a class of British non-rigid airships. Largely used for sea patrol work during the Great War, these were among the most efficient of the non-rigid airships ever built, in 1919 holding the world's record of endurance for non-rigid airships with a non-stop flight of 101 hrs. 50 mins. The ships of this class are 262 ft. long, have a gas capacity of 360,000 cub. ft., a full speed of 58 m.p.h., and can carry nearly 40 tons of useful load.

N.S.P.C.C. Abbreviation for National Society for the Prevention of Cruelty to Children.

N.T. Abbreviation for New Testament.

Nuba. Negro people, mostly in the Dar Nuba region of the Nuba Mountains prov., Sudan. Dark, woolly-haired, stoutly built, and muscular, they are an aboriginal stock, who were driven into the hills in recent times by Baggara and other Sudanese "Arabs" of the plains. Mostly unclad, their personal ornamentation—lip-plugs, tooth-mutilation, and scar-tattooing—attests cultural relationship with the Nilotic negroes. See Africa; Negro.

Nuba. Range of mountains in Kordofan. It contains the districts of Dilling, Sungikai, Kadugli, Rashad, Tagalle, Talodi, and Eleri. The capital is Talodi. Area, 32,200 sq. m. Pop. 268,000. Nuba is also the name of a prov. in the Anglo-Egyptian Sudan.

Nubar Pasha (1825-99). Egyptian statesman. The son of an Armenian, he was born at Smyrna and educated in Europe, entering the Egyptian service about 1844. After holding various posts in Egypt, during which he pushed through the Cairo-Suez rly., Nubar was sent to Constantinople in 1863, to prepare the sultan for Ismail's adoption of the title of khedive. He was then sent to Paris to arrange the final negotiations for the Suez Canal. In 1866 he was appointed minister of foreign affairs. After the intervention of Britain and France, Ismail disgraced Nubar, but he returned to power as prime minister in 1884 and was in

office until 1888. He died in Paris in Jan., 1899. See Egypt; Ismail Pasha; Tewfik Pasha.

Nubia. Name formerly applied to a large region of N. Africa extending on both sides of the Nile from Egypt to Abyssinia, now more generally called the Anglo-Egyptian Sudan. Nubia formed part of the ancient kingdom of Ethiopia, and was divided into Nubia Proper or Lower Nubia, extending from near Assuan to Dongola, and Upper Nubia, extending to and including parts of the Equatorial Provs. See Africa; Ethiopia; Sudan.

Nuble. Inland prov. of Central Chile. Sloping from the Andes to Concepción, it is level and fertile in the W., and produces wheat, cattle, and timber. The vine is cultivated, and an excellent wine made. The capital is Chillán. Its area is 3,498 sq. m. Pop. 175,000.

Nucleus (Lat., kernel). In astronomy, the brightest part of the head of a comet. It is sometimes applied to the central core of sun spots, which have a half shade or penumbra at their circumference, a darker shade within, and a darkest region, the nucleus. In biology, the nucleus of a cell is a small spheroidal or ellipsoidal body which is the centre of the cell's activity and growth. The word is popularly used for the beginning of anything which is intended to grow, e.g. of a library. See Cell.

Nueces. River of Texas, U.S.A. Rising in Edwards co., in the S. of the state, it flows 315 m. S. and S.E. to Corpus Christi Bay, in the Gulf of Mexico. It drains an area of nearly 19,000 sq. m., and provides much water for irrigation.

Nuer. Nilotic negro tribe, mostly in the Bahr-el-Ghazal prov., Sudan. Blue-black, 5 ft. 9 ins., located between the Shilluk and Dinka, they are flat-footed marsh-dwellers, using pile-houses, subsisting on fish and aquatic plants, and hunting with throwing-knives. The women pierce the upper lips.

Nueva Cáceres OR NAGA. City of the Philippines, capital of the prov. of Ambos Camarines, Luzon. It is situated on the Naga river at the foot of Mt. Isarog, 145 m. in a straight line E.S.E. of Manila, and contains a cathedral, bishop's palace, and normal school. The city was one of the six foundations of the Spaniards before the completion of the conquest of the archipelago in 1591, and dates from 1578. Pop. 18,000.

Nueva Esparta. Insular state of N. Venezuela, on the Caribbean Sea. It includes Margarita and adjacent islands, and its capital is La Asunción. Area, 490 sq. m. See Asunción, La; Margarita.

Nuevo León. Interior northern state of Mexico. It lies partly on the slopes of the eastern Sierra Nevada and covers 23,592 sq. m. None of its many rivers is navigable for any distance. The soil yields sugar and cereals. Stock-raising is engaged in, and zinc, silver, and lead are mined. A rly. service radiates from Monterrey, the capital. Pop. 365,000.

Nuisance (Fr. *nuisance*, anything injurious). In English law, anything that does harm or causes inconvenience. Nuisances are classified as public and private. Public nuisances are of many kinds. There are nuisances which are injurious to the public health, such as having on one's property foul drains, sewers, and the like; these are dealt with under the Public Health Acts by the local authorities, who have power, in the last resort, to "abate" them at the expense of the owner or occupier of the property. Nuisances to highways consist of doing acts which cause obstruction to the roads. Nuisances to rivers and streams include polluting their waters or obstructing their flow.

Private nuisances are, or may be, somewhat different. A public nuisance may also be a private nuisance if it causes particular loss, damage, or inconvenience to one person more than it causes to the public generally. Thus, if a man next door to a shop erects an obstruction on the pathway, so that customers cannot enter the shop, it is a private nuisance to the owner as well as being a nuisance to the highway. The general principle of the law of nuisance is that a man shall not use his property so as to cause loss and damage to his neighbour. So that if one erects upon his land a reeking chimney, which makes another house unfit to dwell in (not necessarily unhealthy); or a steam forge, whose perpetual noise seriously disturbs the neighbours; or, being a riparian owner, dams the river or diverts it, so that someone lower down has less than his proper flow of water, he is guilty of nuisance. The remedy for private nuisance is by injunction and damages; and an action can be brought against anyone who continues the nuisance as well as against him who started it.

Nuisances, INSPECTOR OF. Official appointed under the Public Health Act of 1875. His duties are to investigate any complaints with regard to nuisances and to carry out the provisions of the Act for the prevention, abatement, etc., of nuisances. Many of his duties are carried out in certain areas by the sanitary inspector (*q.v.*).

Nukha. Town of Azerbaijan. It is in the dist., and 100 m. N.E., of Elizabetpol, and is situated on the S. slope of the Caucasus range. The chief industries are the cultivation of fruit and the rearing of silkworms. Pop. 42,000.

Nullity (Lat. *nullus*, none). The state of being null or void. In England the term is chiefly used in a legal sense. A nullity of marriage is a proceeding in the divorce court to declare a marriage null and void from the beginning on one of the following grounds: absence of real consent, by reason of one party being insane, or by reason of fraud or duress; consanguinity or affinity of the parties; or impotence of either party, rendering consummation impossible unless it is curable by an operation. If a wife deliberately resists and continues to resist cohabitation, the court may infer that she is impotent. The existence of a prior marriage is also ground for a decree of nullity. When the decree has been pronounced, it is as if no marriage had ever been celebrated, and the wife resumes her maiden name. See Divorce.

Numantia. Ancient stronghold of the Arevaci in N. Spain, on the Douro, near Soria. The centre of the struggle between the Celtiberians and the Romans from 154–133 B.C., it withstood several sieges and defeated a whole Roman army in 137. The garrison of some 6,000 to 8,000 Spaniards was eventually obliged to capitulate through starvation after a 15 months' siege (134–133 B.C.) by 60,000 men under Scipio Aemilianus. The Roman town of Numantia was afterwards built on the site. Excavations conducted 1905–10 brought to light many valuable Roman antiquities.

Numa Pompilius. Second of the seven legendary kings of ancient Rome. He is reputed to have reigned from 715 to 673 B.C. A man of peace, instructed in sacred lore by the nymph Egeria (*q.v.*), he first established the priestly offices of the Roman state. He also divided the land among the people, and the craftsmen into guilds according to occupation. During his reign the gates of the temple of Janus were closed. See Janus.

Number (Lat. *numerus*). Special form of a word to express unity or plurality. In addition to singular and plural, there was also a dual number, indicating that two persons or things were concerned. It survives in some Indo-European dialects and in the Semitic languages.

Number. The abstract ratio of one quantity to another of the same kind. The origin of numbers is lost in history, but the classification of numbers can be traced more definitely. An Egyptian papyrus dating from 1000 B.C. has a collection of problems dealing with fractional numbers. Pythagoras certainly understood polygonal numbers, factors, proportion, etc., and Euclid devoted four books to the subject. The names, etc., of numbers, as trillion, are dealt with in the article Numeral.

Numbers may be classified under many heads, as odd and even, prime and composite, rational and irrational, and figurate numbers. Figurate numbers are those originally derived from geometrical considerations. Odd numbers are 1, 3, 5, 7; even numbers 2, 4, 6; prime numbers those which have as factors themselves and unity; composite numbers those which admit of factorisation, e.g. 12 is $2 \times 2 \times 3$; rational numbers are those which can be expressed as the ratio of two integral numbers; irrational numbers those which cannot be so expressed, e.g. $\sqrt{2}$. The two most important irrational numbers are e , the base of the Napierian system of logarithms 2.7182818..., and π , the ratio of the circumference of a circle to its diameter, 3.14159... The value of the latter has been calculated to over 700 places of decimals. There is a further class of numbers known as unreal or imaginary numbers, the roots of negative quantities. Such numbers are of great importance in many problems of physics.

The theory of numbers was one of the main high roads of mathematical advance for many centuries. Fermat, in the 17th century, enunciated a large number of problems and their solutions in the theory of numbers; Legendre, Euler, and Gauss added a series of brilliant investigations, particularly into the laws governing prime numbers. Cauchy, Cayley, Jacobi, Riemann, Poincaré, Lindemann, Sylvester, etc., carried the theory of numbers still further. See Arithmetic; Fractions; Numeral; consult also Theory of Numbers, G. B. Mathews, 1892.

Number of the Beast, THE, OR APOCALYPTIC NUMBER. A mystical or symbolical number occurring in the apocalyptic vision of the Beasts in the N.T. book of Revelation. The reference is in Rev. xiii, 18: "He that hath understanding, let him count the number of the beast; for it is the number of a man: and his number is Six hundred and sixty and six." The

Beast is here equivalent to the Antichrist who will for a time gain dominion over the whole world, but in the end will be overthrown by the angels of God (Rev. xiv, 14 ff.; xv, 1 ff.). The number is supposed to represent the sum of the numerical values of some proper name, written in Hebrew or Greek letters, and attempts have been made to identify the Beast with various historical characters. Since 616 appears as a variant of 666 (Rev. xiii, 18), a favourite identification is with the Roman emperor Nero (Neron Caesar—666; Nero Caesar—616: in Hebrew letters). Many other identifications have been suggested, e.g. Mahomet, Luther, Napoleon I. See Antichrist.

Numbers. Fourth book of the Pentateuch, or, rather, Hexateuch. It takes its title from the Septuagint, the book being so called because it contains accounts of two numberings of the children of Israel. The Hebrew title is *In the Wilderness*. Three divisions may be distinguished: (a) the first census and other events preparatory to the departure from Sinai, Num. i–x, 28; (b) the journey from Sinai to Moab, Num. x, 29 to xxv, 18; (c) the second census, the appointment of Joshua as Moses' successor, and other events, Num. 26–36. Within these divisions there are a number of sections which form part of the so-called Priestly Code (Num. 1–10, 17–19, 25–31, 33–36). There are several poems in the book. The poetic fragments in Num. 21, one of which has been called the Song of the Well (v. 17, 18), are stated to have been taken from the Book of the Wars of the Lord. The poetic utterances of Balaam (Num. 23 and 24) also belong to the more ancient documents of the Hexateuch. See Hexateuch.

Numeral. Figure or symbol used to represent number. Undoubtedly the earliest way of representing numbers was by means of notches on a stick and by perpendicular strokes. The system now in use in most civilized countries, employing the symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, is partly Hindu and partly Arabic. The scale of tens is probably derived from the number of the human fingers. The value of a numeral under this system varies according to its position, e.g. the 7 in the numbers 7, 71, 716, 7,164 represents 7 units, 7 tens, 7 hundreds, and 7 thousands respectively, and this convenient way of writing numbers gradually came into use in India about A.D. 500 and spread slowly through Europe. The use of the decimal point, with

corresponding results in the alteration of the value of the figure after it according to its position, is of uncertain origin.

The fundamental tens group, i.e. 10, 100, 1,000, 1,000,000, etc., are given distinctive names, e.g. ten, hundred, thousand, million, etc., and repetition of these names and those of the figures 0, 1-9 enable any particular number to be remembered, instead of a fresh name having to be remembered for every individual number. As an example, 2,408,924 is in full two million, four hundred and eight thousand, nine hundred and twenty four. The terms billion, trillion, etc., usually mean a million millions, a million million millions, etc., though in France and the U.S.A. a billion is taken to be a thousand millions only.

Though the above system has survived practically all others, the

Roman numerals are still used for certain purposes, e.g. dates. The symbols I, II, III, IIII explain themselves, but the origins of others in the system are not all certain. X for ten is probably I with a stroke across it, a symbol that must have come into very early use, and V for five is the upper half of the symbol X, as L and D for 50 and 500 are probably half the symbols once used for C and M, 100 and 1,000 respectively. The letters C and M are the initial letters of the Latin words for 100 and 1,000, *centum* and *mille* respectively. The use of IV and IX, etc., are later modifications of IIII and VIIII.

The Greeks used a system of numerals in which the numbers 1 to 9 were represented by the first nine letters of the alphabet, the tens by the next nine letters, and the hundreds up to 1,000 by

another nine letters, two obsolete letters being revived for the purpose of the system. Like other ancient systems, apart from the Hindu-Arabic, it proved too cumbersome for mathematical use, and became obsolete. See Arithmetic; Decimal; Number.

Numidia. Roman prov. of N. Africa, between the provs. of Africa and Mauritania, corresponding to E. Algeria. The name means land of nomads. Masinissa (q.v.) united the country with Roman aid, 201 B.C. On the overthrow of Jugurtha (q.v.) the Romans conquered Numidia, but left it under its own kings. Juba I having sided with Pompey, Julius Caesar made Numidia a Roman province, 46 B.C., but in 25 B.C. Augustus gave the W. part to Juba II (see Juba). The Numidians provided light cavalry for the Carthaginian, and later for the Roman army.



Numismatics. Specimens of ancient Greek and Roman coins. 1. Cyzicus, c. 560 B.C., electrum stater. 2. Croesus, c. 555 B.C., gold. 3. Athens, 560-480 B.C., silver. 4. Athens, c. 550 B.C., silver tetradrachm. 5. Corinth, c. 600 B.C., silver. 6. Philip II, c. 350-336 B.C., gold stater. 7. Philip II, silver. 8. Chalcidice, c. 392 B.C., silver stater. 9. Alexander the Great, c. 320 B.C., silver tetradrachm. 10. Alexander the Great, gold stater. 11. Thurium, c. 450 B.C., silver. 12. Syracuse, c. 413-400 B.C., silver.

13. Roman silver denarius, c. 269 B.C. 14. Roman bronze as. 15. Julius Caesar, c. 50 B.C., gold. 16. Octavian, c. A.D. 1, silver

From specimens in the British Museum



Numismatics. Gold and silver coins minted in England. 17. Edward III, gold noble. 18. Henry III, gold penny. 19. Henry VI, gold angel. 20. Henry VII, gold sovereign, the first issued. 21. Charles II, guinea. 22. William I, silver penny. 23. Alfred, offering penny. 24. Henry VI, silver groat. 25. Offa, earliest Anglo-Saxon gold coin. 26. Henry VII, silver shilling. 27. Elizabeth, sixpence. 28. Charles I, half-crown

From specimens in the British Museum

NUMISMATICS: THE SCIENCE OF COINS

G. F. Hill, M.A., Keeper, Dept. of Coins and Medals, British Museum

Here is related the history of coins, companion articles being Coinage ; Mint. See also Gold ; Medals ; and the articles on the various coins, e.g. Franc ; Mark ; Napoleon ; Peso ; Shilling, etc.

Numismatics (Gr. *nomisma*, a coin) is the science of coins and other similar objects, such as medals. Coins may be defined briefly as pieces of more or less precious metal (usually gold, silver, copper, bronze, or some other copper alloy), serving as a medium of exchange, and marked by the issuing authority with some device (type) or inscription as a guarantee of good quality and definite quantity ; this is to ensure their currency as far as the authority extends. By its intrinsic value, corresponding more or less exactly to its face value, the coin is distinguished from the mere token or from paper money ; it is distinguished from the medal by the fact that it serves as a medium of exchange.

The invention of coinage, by the Greeks in Asia Minor in the 7th century B.C., by the Chinese perhaps about the same time, was the first stage in the development of commerce. From the 7th century

onwards coinage also reflects, sometimes very closely, the general development of culture, throwing light on political and economic history, geography, religion, and art.

The earliest coins of the Greeks were of electrum, a natural mixture of gold and silver found in the river-sands of Asia Minor. In Greece Proper, where gold was not found, the earliest coins, such as those of Aegina, Athens, and Corinth, were of silver. Croesus, king of Lydia, 561 to 546 B.C., was the first ruler to issue coins of pure gold. Philip II of Macedon (359-336 B.C.) initiated a currency of gold and silver which, with the coinage of Alexander the Great, may be regarded as the chief international currency of the ancient world. Alexander's conquests led to the institution of coinage in lands which had hitherto used more primitive methods of exchange. The Jews had no coinage of their own before the middle of the 2nd century B.C.

In the Western world, the Greek colonies, especially in S. Italy and Sicily, had their coinages from the 6th century onwards. The Sicilian series, taken as a whole, ranks in artistic value above any other in the whole history of coinage, the 10-drachm pieces (so-called medallions) of Syracuse, first struck at the end of the 5th century, being perhaps the most famous example of the art. The Roman coinage, which from the first was under Greek influence, begins in the second half of the 4th century, with the *as* and its parts in bronze, at first, owing to its large size, cast, not struck from dies as is the rule for coins ; the silver *denarius*, for long the standard denomination in the ancient world, was instituted in 269 B.C., at a weight of 4.55 grammes. The Roman coinage of gold, normally restricted to the sovereign power, did not become regular until the Imperial period. The Byzantine Empire continued the traditions of the Roman coinage, its gold coin or *besant* being an international unit of currency.

The decay of the Roman Empire, and the rise of the modern nationalities, are faithfully reflected in the style of their coinages. In the

7th century the first Mahomedan coins made their appearance; although, as the representation of living objects was forbidden, they had little influence on the artistic side, they were soon serious rivals to the Byzantine gold in international currency. It was, however, not until the 13th century that the nations of western Europe began to possess a regular gold currency, and this began with the florin of Florence, first coined in 1252, and the ducat of Venice, first coined in 1280. The English silver penny sterling, for its good quality, was largely imitated on the European Continent, especially in the Low Countries, during the 13th and 14th centuries.

The institution of the larger denomination of the *gros* by Louis IX in France, an example soon followed by other countries, robbed the smaller denomination of some of its prestige. The first English regular currency of gold, the noble, was begun in 1344.

From this time onwards the development of European coinage becomes extremely complicated. Among the northern nations, the best period of the coinage is the 14th century, although the practical absence of portraiture robs it of one source of interest. The coinage of the Renaissance in Germany was racially characteristic in its combination of vigour of portraiture with lack of refinement.

In Italy the highest level is reached in the portrait coins of the end of the 15th century, but the noblest contribution of Italy to numismatic art is in the cast medal. Antonio Pisano of Verona (first half of the 15th century), the founder of modern medallic art, and also by far its greatest exponent, is surpassed by few artists of any kind as a master of dignified portraiture and fine design. No other country produced medallists of the same quality as the best Italians, although Germany in the 16th century developed a characteristically vigorous but unimaginative school of portraiture; and in the 17th century, France in Guillaume Dupré and England in Thomas Simon could boast of portrait medallists of very high rank.

Development of Striking

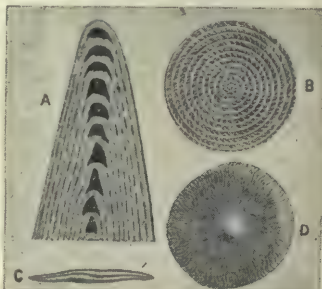
During the 16th century the technique of striking, as distinct from casting, medals was rapidly developed, by no means to the advantage of the art, which lost in significance what it gained in skill. The old method of striking the metal between dies with a sledgehammer was gradually replaced by a press worked with a screw, which was firmly established in most

countries in the second half of the 16th century, and by the second half of the 17th century superseded the primitive method. Technically speaking, perhaps the most remarkable examples of the art of striking coins were produced during this last period; Thomas Simon's Petition Crown (1663), with an inscription struck on its edge begging Charles II to give him employment, has scarcely any technical rival.

The 18th and 19th centuries show for the most part a deplorable falling off in the art of coinage, which is hardly redeemed by 20th century attempts at revival which have been made, chiefly in France.

Colonial Minting

The history of the colonies outside Europe is illustrated from the 16th century by a coinage often very primitive in kind; among the most interesting being the issues of the early Spanish and English colonies in America, and the



Nummulite. Diagrams illustrating formation of fossil shell. A. Highly magnified vertical section of part of shell showing construction of air chambers. B. Horizontal bisection, showing spiral of chambers. C. Vertical bisection. D. Shell viewed from above.

adaptations in the West Indies of Spanish coins to local use by counter-marking, etc. In Asia, important series of coins were issued by some of the Portuguese and Dutch colonies.

India had possessed a coinage quite as early as the time of Alexander the Great, in the shape of small punch-marked pieces of silver. Greek influence, beginning with the purely Greek coins of the kings of Bactria in the 3rd century, is continued through the coinage of the Indo-Scythic rulers, and still traceable in the extraordinarily rich gold coinage of the Gupta dynasty, contemporary with the earlier centuries of the Roman Empire. The medieval coinage of India, both under native rulers and under the Mahomedan dynasties, was enormous, and fills innumerable gaps in the scanty historical records of the country.

China is thought to have begun to use coins as early as the 6th or

7th century B.C.; these were cast in bronze in the shape of knives and other primitive media of exchange; the hole at the end of the handle, by which they were strung together, was probably the origin of the hole in the later Chinese copper cash. Japan derived the style of its coinage from China. The S.E. portion of Asia has used some remarkable examples of primitive currency, the metal being cast in the shape of snail-shells or in ingots of other primitive forms.

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Nummulite (Lat. *nummus*, coin). Genus of fossil foraminifera. The shells are remarkable for being flattened and circular, resembling coins, and yet containing a large number of chambers arranged in a spiral. The genus was abundant during the Eocene, and limestones of that period composed chiefly of nummulites are sometimes several hundred ft. in thickness. These limestone foundations are particularly noticeable in the Alps, N. Africa, Asia, and Central America.

Nun (Lat. *nonna*, an elderly woman, mother, or nurse). Word adopted by the early Church for a woman consecrated to a life of devotion. By the beginning of the 4th century there were communities of consecrated virgins in Egypt, and a little later in Italy also. The Council of Saragossa forbade the veil to be assumed before the age of 40. The Council of Carthage prescribed 25 as the earliest age; S. Basil suggested 17.

It was understood almost from the first that the dedication of a nun was for life; but it was not regarded as absolutely irrevocable until the establishment of the Benedictine Rule. Nuns were consecrated or professed by the bishop of the diocese or his representative; and all convents of women were under his jurisdiction and general supervision. The habit, veil, etc., forming the characteristic garb of a nun, are of early date and a modification of the ordinary dress of women in ancient times.

The term nun is only correctly applied to a female member of the

Benedictine Order, or of one of the orders springing from it. Women belonging to the orders of friars—as the Carmelite, Franciscan, and Dominican—are known as Sisters, as are the members of the many modern congregations of women, whether contemplative or active. Most recent congregations follow some modification of the Augustinian Rule. See Asia; Benedictines; Monasticism; Poor Clares; Mercy, Sisters of.

Nunc Dimittis. Opening words used as the title of a Latin canticle or hymn ("Lord, now lettest Thou Thy servant depart in peace") in the Book of Common Prayer. It is the Song of Simeon (Luke ii, 29-32), his hymn of praise and thanksgiving on being permitted to see the infant Saviour. From very early times the Christian Church has used the hymn at vespers or at compline. In the Anglican Church it is sung after the second lesson at Evensong.

Nuncio (Lat. *nuntius*, a messenger). General term for a diplomatic representative of the pope,

Nuncupative Will (Lat. *nuncupatus*, called by name). Will made by word of mouth in the presence of witnesses. At Common Law such a will was effective to dispose of personal property, but not of realty. The Statute of Frauds and the Wills Act, 1837, made such wills ineffectual, except in the case of soldiers on active service and mariners and seamen at sea, where verbal wills are still of the same force and effect as at Common Law. See Frauds, Statute of; Will.

Nuneaton. Mun. bor. and market town of Warwickshire, England. It is on the Anker, 97 m. from London and 9 m. from Coventry, and is served by the L. & N.W. and Mid. Rlys. and by a canal. The chief buildings are the churches of S. Nicholas and S. Mary, and there is a grammar school dating from the 16th century and a free school of 1712. Its main industries are the making of cotton, woollen, and worsted goods, hats, tools, bricks and tiles, also ironworks; it is a rly. junction and around are coal mines. The manufacture of ribbon has declined. A house for Benedictine nuns was founded here in 1150 and around it Nuneaton grew up. There are a few remains of the nunnery. Having grown considerably in the 19th century, it was made a borough in 1907. George

Eliot was born at Arbury Farm, in the neighbourhood, and around are other places associated with the novelist's life and work. Market day, Sat. Pop. 37,000. See Eliot, George.

Nuneham Park. Seat of Viscount Harcourt. Situated on the Thames, in Oxfordshire, outside Abingdon, the house, built by Simon, Earl Harcourt, in the 18th century, is famous for its picture gallery and gardens. The park extends over 1,200 acres. In it is a conduit, a Renaissance structure, removed here in 1787 from Oxford, where it had stood since 1610.

Nuñez, RAFAEL (1825-94). Colombian politician. Born at Cartagena, he entered the congress of Colombia in 1851. After being secretary of the treasury, he served as consul in Liverpool and elsewhere. Having returned home, he was, in 1880, chosen president, and remained in office until his death, being re-elected several times, although he was too feeble to act for himself during the last few years. His work included the suppression of a serious rebellion in 1884-85, and a thorough reform of the constitution in 1886. See Colombia.

Nuñez Cabeza de Vaca, ALVARO (c. 1490-c. 1564). Spanish explorer. In 1527 he sailed from Spain with an expedition which met with disaster in the Gulf of Mexico, but Nuñez reached land, and after a most adventurous journey reached the city of Mexico, in 1536, and returned to Spain. In 1540 he was appointed governor of the provinces of the La Plata river, and reached Asunción in 1542. The colonists revolted and sent him home in 1545, and later he was sentenced to banishment. Before his death he was pardoned and made a judge. Nuñez wrote an account of his first expedition (Eng. trans. 1851), and also some commentaries.

Nuñez de Arce, GASPAR (1834-1903). Spanish poet and dramatist. Born at Valladolid, he was intended for a priest, but, refusing to adopt that vocation, he went to Madrid and became a journalist. He was only a youth when his first play was produced, and somewhat later he served as a war correspondent in Africa. Soon he was conducting a paper of his own, and in 1865 he definitely entered political life, his liberal views having attracted attention. In 1868 he was made governor of Barcelona, and from 1882-90 he was a cabinet minister, being in turn in charge of the colonies, home affairs, the finances, and education. He died at Madrid, Feb. 12, 1903. His lyrics are considered his best work.



Nuneaton, Warwickshire. Astley Castle, formerly a residence of the dukes of Suffolk, where Lady Jane Grey's childhood was passed

acting with powers restricted by his instructions. The members of the Polish diet were called nuncios. See Ambassador; Diplomacy; Legate.

Nuncomar or **NANDA KUMAR** (d. 1775). Indian official. Governor of Hooghli in 1756, he was deputy to the nawab of Murshidabad when Warren Hastings was appointed resident there in 1758. Discovered in treasonable correspondence against the East India Company, he was sent to Calcutta in 1770, and there implicated in charges of corruption brought against the diwans of Bengal and Bihar. In 1775 he accused Hastings, then governor, of peculation. Before the matter had been gone into by the council, Nuncomar was arrested on a charge of forgery, tried before Sir E. Impey, found guilty, and executed. Impey and Hastings were impeached, but exonerated. See Hastings, Warren; India.



Nuneham Park, Oxfordshire. Main front of the country seat of Viscount Harcourt

By courtesy of Country Life, Ltd.

Nungesser, Lieutenant. French airman. Educated for an engineer, he started an aeroplane business and was engaged in S. America as a designer and builder of aeroplanes when the Great War broke out. Returning to France, he joined a hussar regiment and took part in the early fighting, first as cavalryman, and later in the trenches. Wounded several times, he was passed unfit for active service, whereupon he joined the French flying corps and was specially engaged in aerial bombardments. With Guynemer (*q.v.*) he headed the list of French airmen, and by Nov., 1916, had destroyed over 20 German aeroplanes. He considerably added to this total in 1917-18. See Aeronautics.

Nunhead. District of S.E. London. It is E. of Peckham Rye, and forms part of the bor. of Camberwell. It contains Nunhead cemetery of 50 acres, consecrated in 1840, and the underground Beachcroft reservoir of the Met. Water Board, which took three years to construct at a cost of £230,000, has a capacity of 60,000,000 gallons, and was opened in 1909.

Nupe. District of Africa, now part of Nigeria. It forms a prov. N. of the Niger and the capital is Bida. About the middle of the 19th century the country came under the rule of the Fulas. The British took possession of it in 1897, but only temporarily, its real absorption taking place in 1901, when a new emir, favourable to British interests, replaced the deposed one. See Fula; Nigeria.

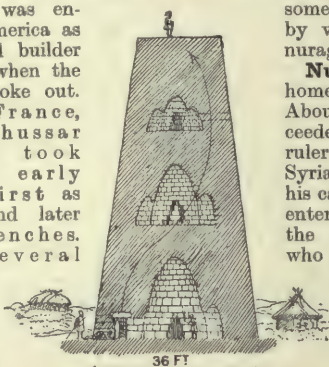
Nuphar. Name proposed by Sir J. E. Smith for the yellow water lilies. Modern botanists, however, have restored the Linnean name *Nymphaea* for the genus. See Nymphaeaceae; Water Lily.

N.U.R. Abbrev. for National Union of Railwaymen. See Railwaymen, National Union of.

Nuraghe. Prehistoric round tower in Sardinia. The typical form is of rough-coursed blocks, clay-mortared, having a basal diameter of about 30 ft., sloping slightly inwards. From the doorway, usually facing S., a corridor leads to an inner chamber, about 15 ft. across, with a vaulted roof. On the right of the entrance is a guard-niche, on the left an ascent to an upper chamber, similarly

guarded. Traces of 6,000 have been found. The largest, protected by platforms with flanking towers, are sometimes surrounded by villages of smaller nuraghi. See Broch.

Nur-ed-din. Mahomedan warrior. About 1145 he succeeded his father as ruler of a state in Syria, making Aleppo his capital. At once he entered upon a war with the crusading princes who had made their principalities in the district, and over them he won several victories. The



Nuraghe. Plan and section of a Sardinian prehistoric round tower. The spiral line seen in the section shows the position of the staircase

second crusade, intended to check his advance, was a failure, and in 1154, when he took Damascus, he had driven the Christians from Syria. In 1159, however, he was beaten by Baldwin, king of Jerusalem, but he soon recovered from the blow and gained new successes. Later he sent into Egypt an army which conquered that country from the caliph. An uncle of Saladin, whose ambitions troubled his concluding years, Nur-ed-din died May 15, 1174. Another Nur-ed-din was an astronomer. Born in Morocco, he lived in the 12th century, and wrote an astronomical work of some note.

Nuremberg. City of Germany, in the republic of Bavaria and the prov. of Middle Franconia. The



Nuremberg arms

second city of S. Germany, it stands in a plain on the river Pegnitz, 95 m. N. of Munich. Unrivalled in the abundance and beauty of its monuments of the German Renaissance, it is also one of the greatest industrial and commercial centres of S. Germany. It is an important

ly. junction, and is served by the Ludwigs Canal, connecting the Main and Danube.

Before the Great War, Nuremberg was one of the commercial centres of Europe, its specialties being toys and hops, for both of which it was probably the largest market on the Continent. The manufactures, in addition to toys, include metal wares, among them fancy articles made of gold and silver, pencils, matches, etc. There are also chemical works, machine shops, lithographic and printing establishments, and works for making railway stock, electrical apparatus, etc.

The old city, surrounded by extensive modern suburbs, is remarkably picturesque, most of its lofty walls and towers of the 14th-16th centuries being preserved. On a hill on the N. is the imperial castle of the 11th and 12th centuries, largely modernised, and near it are the scanty remains of the Burggraves' castle, burnt 1420. The streets contain many fine houses of the 16th and 17th centuries, with richly ornamented fronts, among them being the house of Albert Dürer. Among the fountains the chief is the Beautiful Fountain, 1385-96, adorned with statues. There are many fine churches, rich in sculpture, metal-work, wood-carving, painting, and stained glass. S. Lawrence's, of 1278-1477, contains a splendid stone tabernacle, 65 ft. high, by Adam Krafft, and an Annunciation carved in wood by Veit Stoss. S. Sebald's, 13th-14th centuries, is adorned with some of Krafft's best work, and contains Peter Vischer's magnificent shrine of S. Sebald. The church of Our Lady is of the 14th century, and that of S. Aegidius, in the Italian baroque style, 1711-18, has an altar-piece by Van Dyck.

The grammar school was founded by Melancthon, 1526. The town hall, in the Italian Renaissance style, dates from 1622. The Germanic Museum, established 1857 in a medieval Carthusian monastery, contains a large and rich collection of every branch of German art of every period. There is also an industrial museum.

Nuremberg grew up at the foot of a castle of the Hohenstaufen family, built 1050. It early became a free city, and joined the Rhenish league. The Hohenzollerns were burgraves from 1191 to 1415, when they sold their castle to the citizens. The administration, except during a brief revolt by the artisans, 1348-49, was in the hands of the patricians. The city attained its greatest splendour about 1500,



when it had grown wealthy as an emporium for the Oriental trade of Venice, and was a great seat of artistic manufactures. Watches, called Nuremberg eggs, are said to have been invented here. Decay followed, but Nuremberg maintained its liberties



and its territory of 483 sq. m. until the 19th century, and its annexation by Bavaria in 1806 was followed by renewed prosperity. The Germans call it Nürnberg. Pop. 353,000. See *The Story of Nuremberg*, C. Headlam, 1899.

Nürnberg. German light cruiser. She was sunk by the Kent in the battle of the Falkland Islands (*q.v.*), Dec. 8, 1914. Previous to that she destroyed the British cable station at Fanning Island, Sept. 7, 1914, and participated in the battle of Coronel (*q.v.*). Built at Kiel and completed in 1908, her dimensions were: length 354 ft., beam 44 ft., displacement 3,420 tons, engines 13,200 h.p., and speed 23½ knots. She carried ten 4½ in. and 14 smaller guns, and two submerged torpedo tubes. Another German light cruiser of this name, launched in 1916, was surrendered to Britain in Nov., 1918, and scuttled at Scapa by her German crew, June, 1919.

Nursery. Room for the use of children. In addition to rooms so used in private houses, large towns have public or day nurseries where children are looked after while their mothers are at work (see *Crèche*). By an extension the word is used for a garden or

plantation where young trees and plants for the garden are reared, the man in charge being known as a nurseryman. See *Garden and Gardening*; *Grafting*.

Nursery Rhymes. Verses repeated to young children, and often handed down by tradition. The first actual collection is supposed to have been made in Boston, U.S.A., in 1719; the first known British collection, *Mother Goose's Melody*, was issued about 1760 by John Newbery, and comprised but 30 pieces. It may possibly have been compiled and in part written by Oliver Goldsmith. To each of the rhymes a whimsical moral is appended.

Nursery rhymes are of the most varied origin. Some are believed

to contain traces of heathen worship and magical incantations. In others allusions to historical events or political controversies have been suspected. But, in spite of much discussion, few definite results have been attained. Some counting-out rhymes contain Welsh numerals in a corrupt form. Other rhymes, accompanied by action, are probably derived from medieval dances.

References to some rhymes—such as *Sing a Song of Sixpence*—are to be found in Elizabethan drama. The *Wise Men of Gotham* (*q.v.*) probably dates from the 16th century. Some rhymes are but surviving scraps from much longer pieces. Others that have definitely taken their places in the corpus of British nursery rhymes are demonstrably modern, and of some the authors are known. A *Frog He Would a Wooing Go*, for instance, was written by the comedian John Liston, who, however, based it on an earlier series of verses; *Wee Willie Winkie* was written by the Scottish poet William Miller.

Bibliography. Popular Rhymes of Scotland, R. Chambers, 1826;



Nuremberg, Germany. 1. Half-timbered house of Albert Dürer. 2. Schöne Brunnen, a Gothic fountain built in 1360; to the right is the Church of our Lady. 3. Darrer Brücke, the 15th century bridge from the island of Trödelmarkt. 4. West front of the church of St. Lawrence

Archaeology of Our Popular Phrases and Nursery Rhymes, J. B. Ker, 1837; *The Nursery Rhymes of England*, J. O. Halliwell-Phillips, 1842; *Games and Songs of American Children*, W.W. Newell, 2nd ed. 1903.

NURSING: IN PEACE AND WAR

Mrs. Bedford Fenwick, Editor, *British Journal of Nursing*

With this may be read the articles Ambulance; Hospitals; and Red Cross. See the biographies of Florence Nightingale, and the entries on the various hospitals. See also Beguines; Hôtel Dieu; Mercy, Sisters of

From the earliest times the art of nursing was practised with a certain amount of skill and much self-sacrifice and devotion. The science of nursing dates from the time when Florence Nightingale defined the basic principles upon which the superstructure of modern nursing has been erected.

In addition to intuitive knowledge, accumulated knowledge as to the practice of nursing was handed down by primitive man. The ancient Hindus believed that the prevention of disease was more important than its cure, and laid down excellent hygienic rules. Buddhism, contemporary with the height of Hindu civilization, 250 B.C. to A.D. 750, was a religion of tenderness and compassion. The conquests of Mahomedanism, and also the teaching of the Brahmins, were antagonistic to the humane teaching of Buddha, and hospitals were abolished when Buddhism fell. In Ceylon and Persia there are records of hospitals from early dates, and in Egypt the laws of health were well defined, but the highest standard of excellence in this respect was undoubtedly attained by the Jews, and the sanitary laws of Moses are still patterns of hygienic practice.

Hippocrates (b. 460 B.C.) was acquainted with and inculcated the principles of good nursing, and Aretaeus of Cappadocia (fl. A.D. 100) gave many directions on nursing points. In the classic days of Greece the nursing of sick slaves was one of the duties of the lady of the house. In ancient Rome the best care and nursing available were given to the wounded soldiers, first in private houses, then in tents or separate buildings, where they were nursed by women and old men of irreproachable character. Later, in military hospitals called *valetudinaria*, they were cared for by a class of orderlies called *nosocomi*.

In Early Christian Times

From the establishment of the Christian era to our own day the historical record is unbroken. The chief well-defined orders of women concerned with nursing were the deaconesses, widows, and nuns. The diaconate included men and women, and the care of the poor and sick was prominent among their functions. Phoebe of Cenchrea, described by S. Paul as "a succourer of many, and of myself

also," was the first deaconess, and members of the order subsequently spread through Asia Minor, Syria, Italy, Spain, Gaul, and Ireland. They laid the foundation of the nurse's calling and of modern works of charity.

The *Ordo Viduarum*, the ecclesiastical widows, was a small community of great dignity, later merged in the *monastriae* or nuns. The ecclesiastical widows took a very active part in the development of hospitals. The ecclesiastical virgins did not at first live in community, and they were consecrated, not ordained like the deaconesses. Later the order of deaconesses practically died out, and the virgins and widows were merged in the nun. Nursing by religious orders dates back to the 5th century when S. Brigid of Kildare and her nuns attended the sick.

Military Nursing Orders

The military nursing orders arose at the time of the Crusades, prominent among them the Knights Hospitallers of S. John of Jerusalem, of Rhodes, and of Malta. The Knights Hospitallers were at first a purely nursing order. The Teutonic Knights had both military and nursing duties, and the Knights of S. Lazarus served in the leper hospices, dedicated to S. Lazarus and called *lazarettos*, one of which was in existence in Jerusalem at the time of the first crusade. Other names associated with the care of the sick are those of S. Francis of Assisi, S. Clare, S. Elizabeth of Hungary, and S. Catherine of Siena.

The 12th and 13th centuries also saw the rise of a number of secular orders. The most interesting of these were the *Beguines* of Flanders. The members of the Sisterhood of the Common Life were also pre-eminent as visiting nurses, and the order of San Spirito was a nursing order of great distinction, with headquarters at Montpellier. The *Hôtel Dieu* in Lyons, founded in 542, and later that in Paris, the most celebrated hospitals in France, were nursed by women voluntarily called to serve the sick poor. Later medieval nursing orders were the Grey Sisters, founded in the 13th century, the Brothers of Mercy or Pity, and the Camellines, who nursed the plague-stricken in an epidemic in Barcelona so devotedly that the order became extinct.

Among English hospitals mention must be made of the hospital of S. Katherine, founded by Queen Matilda, the patronage of which has always been in the hands of the queens of England. In 1348 this hospital received a royal charter from Philippa, queen of Edward III, at which time there was added to the scope of the work of the noble ladies who served it, the visiting and nursing of the sick in their own homes.

With the dissolution of the religious houses by Henry VIII, and the expulsion of the religious nursing sisters from the hospitals, lay nurses of the servant class were introduced. From the later part of the 17th century to the middle of the 19th was the darkest period of nursing history, not only in Great Britain but abroad. The well-known characters of Sarah Gamp and Betsey Prig, drawn by Charles Dickens in *Martin Chuzzlewit*, are true pictures of the nurse of the period.

The marriage of Friederika Munster to Theodor Fliedner, pastor of Kaiserswerth-on-the-Rhine, in the third decade of the 19th century, was an influential event in the nursing of the sick. She at once started a society for nursing and visiting in the homes of the poor, and organized a hospital which was the foundation of the deaconesses' institutes which have spread from Kaiserswerth over the world. From here Elizabeth Fry, Florence Nightingale, and others carried ideas and methods into Great Britain.

Institution of Nursing Sisters

In 1840, through Mrs. Fry's influence, the institution of nursing sisters in Devonshire Square, London, was founded with the object of preparing selected candidates for nursing in private houses, and still carries on in S. Kensington. In 1848 S. John's House was founded, the design being "to establish a corporate or collegiate institution, the objects of which would be to maintain, in a community, women who are members of the Church of England, who should receive such instruction and undergo such training as might best fit them to act as nurses and visitors to the sick and poor." It was first located in Fitzroy Square, and had an independent existence until 1919, when the council arranged with the authorities of S. Thomas's Hospital to take it over as a private nursing institution attached to that hospital.

Miss Nightingale's life-work was in connexion with the Nightingale Training School for Nurses at S. Thomas's Hospital, which she

founded with the sum subscribed as a memorial to "the noble exertions of Miss Nightingale and her associates in the hospitals of the East." Her object in founding the Nightingale School was not only that it should provide an efficient education for its own *alumnæ*, but that the latter should become pioneers of nursing reform in other hospitals and infirmaries, by taking, when trained, the higher posts in such institutions. Perhaps the most illustrious example in this connexion was Miss Agnes Jones, who died of typhus fever contracted while establishing the first poor law training school for nurses at the Brownlow Hill Infirmary, Liverpool.

Influence of Florence Nightingale

Miss Nightingale's great contribution to nursing was that she laid down the fundamental laws on which training should be carried on, on so broad a basis, and with such clearness and precision, that they hold good to the present day. Her *Notes on Nursing: What It Is, and What It Is Not* are a classic, dealing not only with the laws underlying the care of the sick, but foreshadowing the preventive nursing, based on sanitary science, which to-day is given so much prominence. She also claimed insistently that probationers should be taught the principles underlying their work—"the reason why," or they could not train others.

As the benefit of skilled nursing came to be appreciated and systematised, nurses at the conclusion of their training specialised in those branches which most appealed to them. District nursing made large claims. The Biblewomen and Nurses Mission was founded by Mrs. Ranyard in 1868, and still carries on good work under the name of the Ranyard Nurses; the Metropolitan and National Nursing Association was founded in 1874 by the Order of S. John of Jerusalem; the Queen Victoria Jubilee Institute for Nurses was founded with the Women's Jubilee Offering to Queen Victoria in 1887. The highly skilled and specialised work of queen's nurses has been of incalculable benefit to the poor throughout the United Kingdom. Nursing in poor law infirmaries, in infectious hospitals, in asylums, or mental hospitals, for the insane, and in connexion with primary schools, has greatly developed of recent years.

The term of training in all the principal nurse-training schools in Great Britain is at present from three to four years. In past wars the number of nurses employed has

been relatively small. The conservative naval and military services were slow to learn the lesson of the value of the services of women nurses in war, even after the demonstration given by Miss Nightingale in the Crimea. In the South African War (1899-1902), trained nurses did good work in the base hospitals, but it was not until the Great War (1914-18) that their services were utilised under shell fire. The nation's extremity was the nurses' opportunity, and British nurses served the sick and wounded in casualty clearing stations near the firing line, on ships in peril of being torpedoed, and in hospitals subject to attacks from the air.

Members of the French Flag Nursing Corps—a corps of certificated British nurses working under the French War Office—did excellent service in hospitals in the French war zone and elsewhere. Trained nurses also worked in the countries of the other Allies, and in Serbia took part in the retreat.

The movement for the organization of nursing as a profession, in the United Kingdom, was inaugurated in 1887, when the British Nurses' Association was formed in December of the same year upon the invitation of Mrs. Bedford Fenwick. It included in its objects "To unite all qualified nurses in membership of a recognized profession and to provide for their registration." It announced from the first that its intention was to obtain a royal charter of incorporation, which was granted to the association in 1893, and to publish a register of trained nurses, the ultimate object being to secure their registration by the state. The first register was published in 1891.

State Registration of Nurses

The first bill for the state registration of nurses was drafted by the Society for the State Registration of Trained Nurses, and introduced into the House of Commons in 1904. In 1908 it was withdrawn from the lower house, and introduced into the House of Lords, where it was carried.

In 1910 the central committee for the state registration of nurses was formed, composed of delegates from all the societies engaged in promoting nurses' registration, "for the purpose of securing united action until a satisfactory law has been passed by Parliament."

In 1919 the minister of health brought in a government measure for the state registration of nurses. As his jurisdiction only extended to England and Wales, his bill was limited to those countries, but bills were introduced almost simul-

taneously by the secretary for Scotland and the chief secretary for Ireland, which were practically identical with the English and Welsh bill. They give liberal and direct representation on the governing bodies to the registered nurses in each country, with power to define educational standards and conduct examinations. The royal assent was given to all three bills on December 23, 1919.

Nursing was thus established as a profession, and its accredited members are henceforth differentiated from partly trained and untrained persons, and accorded definite legal status through a state register, enrolment in which carries the right to a protected uniform and badge.

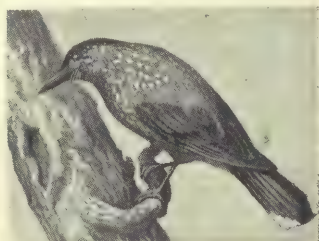
In the Nurses Registration Acts provision is made for the establishment of three general nursing councils. The first council for England and Wales consists of 25 members, namely:

- (1) Two persons not registered medical practitioners, or nurses, or persons concerned with the regular direction or provision of the services of nurses, appointed by the privy council;
- (2) Two persons appointed by the board of education;
- (3) Five persons appointed by the minister of health, after consultation with persons and bodies having special knowledge and experience of training schools for nurses, of the work of matrons of hospitals, of general and special nursing services, and of general and special medical practice;
- (4) Sixteen persons who are or have been nurses, appointed by the minister of health, after consultation with associations or organized bodies of nurses or matrons mentioned in the schedule to the Act.

At the expiration of the term of office of the first members of the council, the place of the 16 nurses appointed by the minister of health were filled by 16 persons registered as nurses under the Act elected by the registered nurses. The Scottish and Irish councils consist of 15 members, appointed on similar lines. There are now some 50 Acts for the state registration of nurses in force in various parts of the world, including, in the British dominions, New Zealand, provinces and states in Canada, Australia, and South Africa, and in foreign countries Germany and Belgium.

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Nursing, COLLEGE OF. British association, founded in 1918 to provide a central organization to



Nutcracker. Specimen of the species of crow

promote the interests of the nursing profession. It has local centres and branches in Scotland and Ireland. In 1920 its membership was over 19,000, and about £50,000 had been raised for endowment and other purposes. In Oct., 1920, Viscount and Viscountess Cowdray presented the house, 20, Cavendish Square, London, W.C., for the headquarters of the college.

N.U.T. Abbreviation for National Union of Teachers (*q.v.*).

Nut. Strictly speaking, the dry fruit developed from the carpels of the flower. The carpel contains two or more ovules, but as a rule only one develops into a seed—the kernel of the nut. This is invested by a shell of hard or leathery tissue, which does not split until the seed germinates. The term as used commercially or popularly does not always coincide with the botanical meaning; thus, an acorn is a true nut; a ground-nut is not a nut, but a pod; walnut is the “stone” of a fruit formed like a plum or cherry (drupe); and earth-nut, or pig-nut, is a tuber. Types of true nuts are found in hazel, beech mast, and sweet chestnut. See Brazil Nut; Cob-nut; Fruit.

Nut. In engineering, a short, concave screw. It usually consists of a small block of metal with a central hole cut in a screw thread, and is used for holding bolts firm, etc., and parts of machinery. The block of metal is usually hexagonal in shape, or corrugated in some way to enable a firm grip to be obtained for tightening or loosening. Castellated nuts have grooves in the head for fitting firm with split pins, etc.

Nutation. In astronomy, the oscillatory movement produced in the earth's axis by the attraction of the moon on the equatorial protuberance of the earth. The line of the earth's axis cuts the heavens at a point known as the celestial pole, which describes a circle round the pole of the ecliptic, and this circle is in itself subject to a small dis-

turbance, making the circle a wavy one instead of uniform. This disturbance is called nutation. See Precession.

Nutcracker (*Nucifraga caryocatactes*). Bird belonging to the crow family. Widely distributed over Europe and Asia, it is an occasional visitor to Great Britain. The crow is rather smaller than a jackdaw, and has brown plumage spotted with white, except the wings and tail, which are black. It occurs in woods, where it feeds mainly on seeds of conifers and insects. The word is also used for a metal implement used to crack nuts.

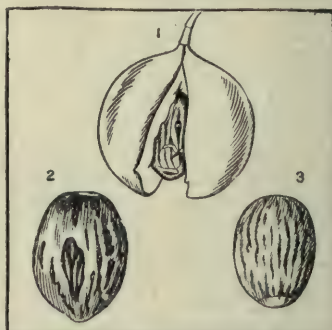
Nuthatch (*Sitta*). Genus of birds of the family Sittidae. The common nuthatch, *S. caesia*, is a small bird, fairly common in the S. and Midland counties of England, rare in Scotland, and not found in Ireland. It is about 5 ins. long; and the plumage is bluish grey on the upper parts, with white throat, buff underparts, and grey and black tail. It has the habit of running upwards



Nuthatch searching a tree trunk for insects

or downwards over the branches and trunk of a tree like a mouse. It nests in a hole in a tree; and if the hole is large, stops it up with clay, leaving an opening only large enough to pass through. It feeds upon the insects and grubs that it finds in crevices in the bark, in search of which it taps the tree like a woodpecker. In the autumn it takes partly to a diet of nuts, which it fixes in a crevice in the bark, and splits with its beak. There are several American species of the bird, and other species in Asia and Africa.

Nutmeg (*Myristica fragrans*). Seed of a tree of the natural order Myristicaceae, native of Malaya. The tree attains a height of about 30 ft., has large, aromatic, leathery, alternate, evergreen leaves, and small, pale yellow flowers. The small fruits are pear-shaped, containing a single seed (nutmeg), which is invested first with a crimson fibrous network (mace), and externally by a thick, fleshy coat. The tree begins to bear fruit when eight years old, attains its maximum at twenty-five, and continues profitable for another 35 years or so.

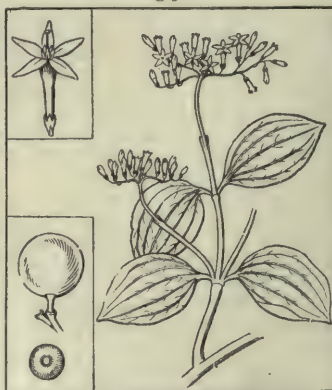


Nutmeg. 1. Fruit beginning to open. 2. Nutmeg covered with mace. 3. After removal of mace

Nutmeg and mace are used in cookery as a flavouring for custards and puddings; and in medicine as an aromatic, stimulant, and carminative, but chiefly to disguise the taste of less pleasant drugs, such as rhubarb.

Nutrition. Nourishing or maintaining of an organ or individual in a state of good health by the assimilation of food. Adequate nutrition demands not only the taking in of new materials, but also the removal from the tissues of waste products. In a child the process of building up exceeds that of breaking down. In the adult the two processes are balanced, and in old age the removal of material is in excess. Besides supply of sufficient food, adequate nutrition also demands exercise of functions. Hence the necessity of regular exercise of muscles, without which wasting will occur, as seen in the limbs of persons suffering from some forms of paralysis. See Diet; Food; Metabolism.

Nux Vomica. Seeds of a small tree, *Strychnos nux-vomica*, of the natural order Loganiaceae. A native of India and N. Australia, it has strongly veined, oval,



Nux Vomica. Spray of foliage and flowers. Inset, above, single flower: below, fruit and seed

opposite leaves, and panicles of greenish-white tubular flowers. The fruit is a large berry, resembling an orange, with numerous silky-haired, disk-like seeds an inch across, embedded in the edible pulp. The dried seeds, ground to powder, yield the alkaloids strychnine, brucine, loganin, and igasuric acid. The proportion of alkaloids varies from 2 to 3 p.c., of which one half is strychnine. The latter drug is also obtained from the triangular, hairless seeds of the allied plant *Ignatius Bean* (*S. ignatii*), of the Philippines, which are frequently substituted. See Strychnine.

Nyamwezi. Negroid people of Bantu speech in Tanganyika Territory, E. Africa. The plural is Wanyamwezi. Mostly in the highlands between the Victoria Nyanza and Tabora, they are a muscular, dark-brown people, 5 ft. 6 ins., long nosed, and often curly-haired. The men tend cattle, sheep, and donkeys; the women raise crops of grain, sweet potatoes, and cassava. Beehives are often kept in the oblong dwellings. Situate on the highway from Bagamoyo to Lake Tanganyika, they came early under Arab cultural influences. See Bantu; Negro.

Nyangwe. Town of the Belgian Congo. On the Lualaba-Congo river, in the Maniema district, it is a small agricultural settlement, about 35 m. N.W. of Kasongo. It was formerly a large native centre, and came under the influence of the Zanzibar Arabs. From this point in 1876 Stanley commenced his descent of the Congo.

Nyanza. Central African word for lake. The best examples are found in the names of the three lakes which form the main sources of the Nile, i.e. Victoria Nyanza, Albert Nyanza, Edward Nyanza.

Nyasa. Third largest lake in Africa. It is a deep basin about 300 m. long and from 15 to 60 m. wide, lying at an alt. of 1,645 ft., and occupies part of the Great African Rift Valley. To the N. and E. it is closely approached by lofty mts. and tablelands. The only outlet is the Shire river, issuing at its S. extremity and flowing into the Zambezi. The principal affluents are the Songwe, Rukuru, Bus, and Lintipi on the W. coast. The water of the lake is fresh and its level varies with the amount of the annual rainfall. Fort Johnston, at the S. outlet, Kota-Kota, and Karonga are the most important ports. Lake Nyasa was discovered in 1859 by David Livingstone from the S. and A. Roscher from the E.

Nyasaland. British Protectorate in Central Africa. It lies along the W. shores of Lake Nyasa



Nyasaland. Map of the British Protectorate in the uplands of Africa

and to the S. of that lake, is approximately 520 m. in length, and has an area of 39,573 sq. m. The S. portion is about 130 m. from the sea. The Protectorate is bounded N. by Tanganyika Territory, W. by Rhodesia, S.W. and S.E. by Portuguese East Africa, and E. by Lake Nyasa. There are two natural divisions, the one consisting of the W. littoral of Lake Nyasa, with the tablelands separating it from the basin of the Loangwa river, and the districts between the watershed of the Zambezi and the Shire rivers on the W., and the other on the E., the districts of Lakes Chiuta and Chilwa and the Ruw, with the Shire highlands and Mlanje.

The spheres of influence of Great Britain, Germany, and Portugal

9,843 ft. in alt.; the Shire highlands lying E. of the Shire river, of which the highest portion is Mt. Zomba, 7,000 ft.; the Kirk range, W. of the Shire, reaching 7,000 ft.; the Angoni plateau, at the S.W. end of the lake, reaching 8,000 ft.; and the Mangoche Mts. In addition to Lake Nyasa, there are two other considerable lakes, Chilwa or Shirwa, 100 sq. m., and Chiuta, 30 m. long; but the only important river is the Shire.

The most important products are cotton, tobacco, coffee, tea, chillies, rubber, rice, maize, wheat.

were defined by agreements with Germany and Portugal respectively in July, 1890, and June, 1891, and the limits of the Protectorate settled by a proclamation of May 14, 1891. Before that date the territory was part of British Central Africa. From 1893 until 1907 it was known as the British Central Africa Protectorate, but the former name of Nyasaland Protectorate was revived in Oct., 1907. In 1904 the administration was transferred from the Foreign Office to the Colonial Office. The administrative capital is at Zomba, but the chief town is Blantyre, the railroad of the Shire Highlands rly.

A large portion of the Protectorate is mountainous or composed of lofty plateaus rising somewhat abruptly. The principal ranges are the Mlanje Mts., between Lake Chilwa and the river Ruw, of which the highest peak is



Nyasaland arms

and fibres. Most of the exports travel by the Shire Highlands rly. to Port Herald on the river Shire and to Chindio on the Zambezi, and thence by river transport to the British concession at Chinde at the mouth of the Zambezi. In 1921 the construction of the trans-Zambezi rly. from Beira was being pushed rapidly forward; the Nyasaland section of this rly. is to run from Luchenza (S. of Blantyre) direct to Port Johnston at the S. end of Lake Nyasa.

The native pop. of the Protectorate is estimated at 1,200,000; the number of Europeans is 720 and of Asiatics 410. The native races are of Bantu-Negro stock, and are divided into ten groups, of which the most important are the Anyanja, the Yao, the Angoni, Makololo, and Awemba; and the principal languages are Swahili, Yao, and Chinyanja, the last being in almost universal use.

At the outbreak of the Great War prompt action surprised and disabled the German steamer Hermann von Wissmann while on the stocks at Sphinxhaven, and gave the British command of Lake Nyasa. The military forces were mobilised with headquarters at Karonga, while the Germans endeavoured without success to induce the Moslems in Nyasaland to rise against the British.

On Sept. 8, 1914, a British force, working N., attacked the enemy, whose main body had arrived simultaneously to attack Karonga. While attacking it the Germans were put to flight, and later in the same day the two main bodies came into collision, and the German force was routed. In May, 1915, a naval detachment reached the Protectorate, and as reports were received that the Germans were repairing the Hermann von Wissmann, a force went to Sphinxhaven on May 30, disabled the steamer, and captured a large supply of stores and ammunition. The subsequent success of the British campaign in East Africa freed the Protectorate from danger. See Africa; E. Africa, Conquest of.

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Nyborg. Port of Denmark, on the E. coast of the island of Fünen. Situated 18 m. by rly. S.E. of Odense and one hour by steam ferry from Korsør in Zealand, it has a deep and spacious harbour, and exports cereals. It has a Gothic church and an arsenal housed in an old royal residence. Founded in the 12th century,

Nyborg became an important town and was a fortress until 1867. Here, in 1659, the Swedes were defeated by the Danes. Pop. 8,500.

Nye, EDGAR WILSON (1850-96). American humorist, better known as Bill Nye. Born at Shirley, Maine, Aug. 25, 1850, he was admitted to the Wyoming bar in 1876 and became a member of the legislature, postmaster, and journalist. He first attracted attention by articles which he contributed to The Denver Tribune. His chief works are Bill Nye and the Boomerang, 1881; Bill Nye's Blossom Rock, 1885; and Comic Histories of the United States, 1894, and of England, 1896. He died Feb. 22, 1896.



Edgar W. Nye, American humorist

Nyehin. Town of W. Russia. It is in the govt., and 40 m. S.E., of Chernigov, on the river Oster and the Kiev-Kursk-Voronezh rly. There are breweries, tanneries, and a large trade in tobacco, which is extensively cultivated in the neighbourhood. Pop. 52,000.

Nyiregyhaza. Town of Hungary. It is an important rly. junction 31 m. by rly. N.N.E. of Debreczen, and is noted for its wines and for its chemical industry based on the salt extracted from marshes near. Pop. 38,000.

Nyitra. Town in the Slovakia div. of the Czecho-Slovak Republic, now known as Nitra, formerly in the kingdom of Hungary. It is on the Nyitra, 23 m. N. of Érsekújvár by rly., and is an important road junction on the N.E. of the Little Alföld. It is the seat of a bishop and is set amid vineyards. Pop. 16,400.

Nyköping. Port of Sweden, capital of the län or govt. of Södermanland. Situated on a bay of the Baltic 52 m. direct (100 m. by rly.) S.W. of Stockholm, it has a good harbour and a ruined castle, destroyed by the populace in 1317. Nyköping has cloth and engine factories and exports grain and iron ore. One of the most ancient towns in the country, 15 national diets were held here in the 13th-15th centuries. Pop. 11,200.

Nymph. In classical mythology, a localised nature spirit, regarded as a minor deity. There were different classes of nymphs; sea and water nymphs, such as the Oceanids, the Nereids, and the Naiads; Oreads, or mountain nymphs; Dryads and Hamadryads, or tree-nymphs. They

had no temples, but offerings were made to them of milk and honey in grottoes, at fountains, trees, etc. Anyone meeting a nymph became frenzied. In art, nymphs were represented as beautiful maidens, at first fully clothed, but subsequently naked.

Nymphaeaceae. Natural order of aquatic, perennial herbs. Natives of the temperate and tropical regions of the world, they have stout creeping rootstocks, and mostly floating leathery leaves. The flowers are solitary, with three or six sepals, three or more petals (often numerous), and many stamens. It includes the sacred bean (*Nelumbium*), water lilies (*Castalia*, *Nymphaea* and *Victoria*), etc. See Water Lily.

Nyren. Name of two English cricketers. Richard Nyren came of a Scottish family, originally Nairn. He was settled in Hampshire by about 1750 when he founded the Hambledon club (see Hambledon). He kept the Bat and Ball Inn, on Broad Halfpenny, and looked after the adjoining ground. Left-handed and one of the finest bowlers of his day, he was also a good batsman. His son John (1764-1837), besides being a cricketer of repute, wrote The Young Cricketer's Tutor, comprising full directions for Playing the Elegant and manly Game of Cricket, 1833. John died at Bromley, June 30, 1837. See Cricket.

Nystad. Town and seaport of Finland. Called in Finnish Uusikaupunki, it is in the dist. of Abo-Björneborg, on the Gulf of Bothnia, 40 m. N.W. of Abo. It has a good harbour and docks, and a considerable trade. The port has direct connexion with the Åland Islands. The peace of Nystad, 1721, gave Russia extensive Baltic territories. Pop. 5,000.

Nystagmus. Oscillating movement of the eyeball, usually lateral, but sometimes vertical or rotatory. The most frequent form is coal-miner's nystagmus, which is due primarily to working in a dim light. It improves if work in the mine is given up. Miners working in open mines to which daylight penetrates do not contract nystagmus. It is a symptom of various nervous disorders, particularly the affection known as disseminated sclerosis. Nystagmus following disease of the nervous system is practically incurable. See Eye.

Nyx. In Greek mythology, the personification of night, called Nox by the Romans. She was the daughter of Chaos, the primal void, and mother of Aether (Heaven) and Hēmera (Day). She is represented as a winged goddess in a chariot.



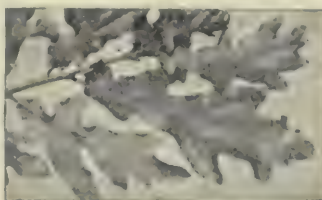
O. Fifteenth letter and fourth vowel of the English and Latin alphabets. As in the case of *e*, it is impossible to give any definite rules for its various sounds and combinations. Its two chief values are long *o*, as in *dote*, short *o* as in *dot*, which is really the *au*, *aw* heard in *call*, *bawl* shortened. It equals short *u* in *another*, and *oo* in *prove*. It combines freely with other vowels. *Oa* equals long *o* in *boat*, *moat*, but not in *abroad*, *board*; *oe* equals *e* in words of Greek origin, and is now generally so spelt, as in *economy*, *ecology*; in other words it equals long *o* as in *hoe*, *roe*. *Oi*, *oy* in *boiler*, *boy* really equals *aw* and *i*; *oo* is long in *boon*, and short in *wood*, and in *blood*, *flood* equals short *u*. *Ou* presents a great variety of sounds. See Alphabet; Phonetics.

Oak (*Quercus*). Large genus of trees of the natural order Amentaceae, including about 300 species, natives of the N. temperate regions, Indo-Malaya, the Pacific coasts, etc. The typical species is, of course, the British oak (*Q. robur*) whose trunk may be 120 ft. high, with a girth of 60-70 ft., covered with thick rugged bark, which cracks both vertically and horizontally. The branches are massive and tortuous, and in the open spread widely with a downward tendency, producing a dome-shaped mass. The oblong oval leaves are arranged spirally, and their edges are cut into variable lobes. The minute flowers are green and inconspicuous; the fruit is the nut known as the acorn.

There are two well-marked British forms of this species which

are given specific rank by some authorities. In one of these (*sessiliflora*) the leaves have a distinct but variable stalk, and the acorns are seated almost directly on the twig; in the other (*pedunculata*) there is little or no leaf-stalk, and the acorns have long, slender stalks. Several exotic oaks have been introduced to Britain, and are frequently met with in parks and gardens. The most common of these is the holm oak (*Q. ilex*) (*q.v.*) and the Turkey oak (*Q. cerris*) both from S. Europe. The latter was introduced about 1735, and is distinguished by its pyramidal form, its narrower, more acutely lobed leaves, and the long, curled scales of the acorn cup which give it a mossy appearance. Another S. European oak well established in British parks is the cork oak (*Q. suber*), and a well-represented N. American species is the dyer's oak (*q.v.*), whose large leaves turn orange or dull red in autumn. N. America has over a score of oaks. Several besides British oak yield bark suitable for tanning.

Although the fine-grained, hard oak timber has lost much of its former importance through the introduction of steel girders and



Oak. Leaves of species of oak

framing in structural work, and the competition of the more easily worked coniferous woods, it is still employed largely where endurance and the bearing of heavy strains are concerned; also for cabinet making, furniture, and panelling. This is obtained from the larger species, including of course, British oak, Turkey oak, the white or Quebec oak, dyer's oak, and holm oak. For this purpose oaks have to be grown closely in woods to produce great length and equal thickness of trunk, and to discourage the production of lateral branches—which were in request in the era of wooden ships. Propagation is effected by means of the acorns. British oak thrives best in rich loams.

The British oak is a tree of great longevity, as shown by many existing ruins of former giants, such as the Greendale oak at Welbeck, variously estimated by experts as being from 700 to 1,500 years old; and the Cowthorpe oak near Wetherby, Yorks, considered to have survived for 1,800 years. Some of these estimates may be too liberal, but it is quite certain that the tree naturally attains to a great age. It does not produce acorns until between 60 and 70 years old, and it does not pay to cut it for timber until it is in its second century. See Acorn; Forestry.

Oak-apple Day. Name given in England to May 29. The birthday of Charles II in 1630, and the day in 1660 on which he set foot in England at the Restoration, it was celebrated by royalists, who decorated their houses with branches and leaves of oak, so



Oak. Specimen of the British oak tree, *Quercus robur*, in full leaf

commemorating also the king's escape from the parliamentary soldiers searching for him after the battle of Worcester, when he hid with Colonel Careless in the oak at Boscobel, near Donington, in Shropshire. Oak-apple day is still observed in many parts of England, notably at the Royal Hospital, Chelsea, as Founder's Day, when the statue of Charles II is decorated with oak-leaves and solemnly saluted.

Oakeley, SIR HERBERT STANLEY (1830-1903). British organist and composer. Born in London, July 22, 1830, he was educated at Christ Church, Oxford, and afterwards at Dresden. Composer of many well-known songs, anthems, etc., he was professor of music at Edinburgh, 1865-91, and was knighted in 1876. He died Oct. 26, 1903. See Life, E. M. Oakeley, 1904.

Oakengates. Urban dist. and market town of Shropshire, England. It is 13 m. from Shrewsbury, with stations on the L. & N.W. and G.W. Rlys. The chief industries are the coal mines and iron-works. Market day, Sat. Pop. 12,000.

Oak Gall. Abnormal growth of the surface tissues of the oak, caused by the attacks of gall-wasps. The female gall-wasp pierces the shoot-buds and deposits eggs in the wounds, setting up irritation which produces swelling of the plant tissue. These attacks give

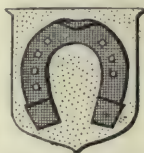
rise to galls of various forms, but all serve as food stores for the larva which emerges from the egg. Oak



Oak Gall. The marble or bullet gall

galls were formerly used in ink manufacture, and are still used in dyeing. See Gall Fly.

Oakham. Market town and co. town of Rutland, England. It is 94 m from London and 9 from Melton Mowbray, with a station on the Midland Rly. The chief building is the church of All Saints. The banqueting hall of the castle, which was built in the 12th century, is used for county business. Of interest, too, are Flore's House and the butter cross. The main industries are the manufacture of boots and shoes. Oakham is also a hunting centre.



Oakham arms

The lord of the manor has the right to claim a horseshoe from any peer passing for the first time through the town, and there is a collection of these in the castle hall. Market day, Mon Pop. 3,700.

Oakham school was founded in

1584 by Rev. Robert Johnson. Its constitution was remodelled in 1875, and it is now a public school with accommodation for about 200 boys. The old school still stands; modern buildings include the school house, junior house, laboratories, gymnasium, sanatorium, etc.

Oakland. City of California, U.S.A., the co. seat of Alameda co. A residential city opposite to San Francisco, on the E. shore of San Francisco Bay, it is served by the Atchison, Topeka, and Santa Fé and other rlys., and has tramway and ferry services. It is surrounded by gardens and vineyards, and the educational institutions include S. Mary's R.C. College and a Congregational seminary. The city has shipbuilding yards, fruit canneries, flour and planing mills, carriage works, and cotton, iron and steel, and leather manufactures. Oakland was incorporated in 1852, and chartered as a city in 1854. Pop. 216,000

Oak Park. Residential suburb of Chicago, in Cook co., Illinois, U.S.A. It lies 7 m. W. of the central part of Chicago, and contains a public library, a high school, and charitable institutions. Pop. 39,900.

Oaks, THE. English horse-race. It is run at Epsom on the Friday of Derby week. The course is the same as that of the Derby, and the race is for fillies of three years old. The Oaks is the name of a house

near Epsom. In 1778 it was the property of the earl of Derby, and it was during a dinner party there that the earl and his friends decided to found the race. From 1915-18 the race was run at Newmarket. See Horse-racing.

Oakum (*O. E. acumbe*, off-combings). Loose hempen fibre made from old ropes, used for caulking seams and stopping leaks on ships, and as an emergency surgical dressing. Tarr'd ships' ropes make the best oakum. Picking oakum was formerly a common employment in prisons and workhouses. White oakum is made from untarred ropes. Tow, the inferior parts of the flax fibre which separates out during the process of hackling, was formerly known as oakum.

Oakworth. Urban dist. of Yorkshire (W. R.), England. It is 3 m. S.W. of Keighley, with a station on the Mid. Rly. The chief industries are the manufacture of cotton and worsted goods. Pop. 4,300.

Oamaru. Town and port of South Island, New Zealand. Situated 152 m. S. of Christchurch, and 78 m. N. of Dunedin by rly., it exports wool and grain. The centre of a rich agricultural district, it has freezing works and woollen mills. Its limestone is a useful building stone. Pop. 5,100.

Oar. Implement for moving a boat. It consists of a long, slender piece of wood, with a handle at one end and a blade at the other, the blade acting as a lever when in contact with the water. Each oar rests in an oarlock or rowlock. In early times galleys were propelled by slaves sitting in rows. The implements used for propelling a light boat are called sculls; the sculler uses two of them, whereas the oarsman proper only uses one, the balance being secured by another oarsman rowing on the other side of the boat. Oarsman-

ship is a synonym for rowing, and a competent performer is sometimes called a good oar. See Eight; Galley; Rowing; Sculling.

Oar Fish (*Regalecus glesne*).

Remarkable deep-sea teleostean fish of the family Trachyteridae. They are found in the Atlantic, Mediterranean, and North Sea, off the Faroes, Scotland, Norway, and N.E. England. The compressed, elongated, and scaleless body may be as much as 20 ft. long, with soft bones, a small mouth without teeth, and a dorsal fin that extends from behind the head to the imperfect tail. The first few rays of this fin are very long, with dilated tips, forming a

rare occasions when it comes to the surface it swims with an undulating movement and the crest and dorsal



Oar Fish. Specimen of the deep-sea fish called by North Sea fishermen King of the Herrings

fin out of the water, when it may easily become the "sea serpent." Little is actually known about it, for the few specimens that have been cast ashore have broken up rapidly. Allied, if not identical, is the ribbonfish (*R. bankii*).

Oarweed (*Laminaria digitata*).

Large olive seaweed of the natural order Laminariaceae. It has a long, thick, round stem, with claw-like false roots, which attach it to the rocks. The thick, leathery, leafy portion, at first undivided, splits up into a number of segments. The



Oamaru, New Zealand. General view of the town and harbour from the north

whole plant is 15 ft. long, and grows on the rocks below ordinary low-tide level. Tangle and sea-girdles are popular names for this Alga.

Oás. Town of Luzon, Philippine Islands, in the prov. of Albay. It stands on the Inoya river, 16 m. N.W. of Albay, and trades in hemp. Pop. 12,500.

Oasis. Fertile tract in a desert. The fertility of oases is due to water near the surface, either in depressions, so that the sinking of wells will give permanent supplies of water, or along the course of wadies, or, as in the case of the Nile, along the banks of permanent waterways passing through deserts. By cultivation they can be made to produce a wide range of crops. The date palm groves of Saharan oases are famous. See Desert.

Oast House. Kiln in which hops or malt are dried. They are seen in Kent, or other districts where hops are grown. See Hops.



Oasis of Touggourt in the Sahara. Top, general view of the town and oasis; below, scene on the fringe of the oasis

Oates, LAWRENCE EDWARD GRACE (1880-1912). British explorer. Educated at Eton, he was



L. E. G. Oates,
British explorer

gazetted to the Inniskilling Dragoons, and served in the South African War, 1901-2, where he was severely wounded, and in India, and Egypt. He joined the Antarctic Expedition in 1910, and was one of the sledge-party who accompanied Scott in his final dash for the South Pole. On returning the party was storm-bound, and on March 17, 1912, Oates, crippled by frostbite, went out alone into the blizzard to die rather than be a burden to his starving comrades. See Antarctic Exploration.

Oates, TITUS (1649-1705). British conspirator and perjurer. He was born at Oakham, Rutland. Although expelled from Merchant Taylors' School, and sent down from Cambridge without taking a degree, he received ordination, but shortly afterwards was imprisoned for disgraceful perjury. In 1677 he joined the Roman Catholic Church, and went to the English Jesuit College at Valladolid, whence he was expelled.



Titus Oates,
British conspirator
After R. White

In June, 1678, Oates was in London concocting details of a Roman Catholic "plot" to kill the king, to invade Ireland, and to indulge in a general massacre of Protestants. He duly revealed it to Sir Edmund Godfrey, a justice of the peace, who was found dead shortly after. For a time Oates was a popular idol. Nearly three dozen people were executed through his machinations. At last, in May, 1684, he was arrested for calling the duke of York a traitor, and after the duke's accession as James II, was tried, and sentenced to a heavy fine, to whipping, and to imprisonment for life, with annual exposure in the pillory. After William III came to the throne, he was released, and enjoyed a pension. He died July 12, 1705. See Twelve Bad Men, T. Seccombe, 1894; History of My Own Times, G. Burnet, new ed. 1897.

Oates Land. That part of South Victoria Land, Antarctica, lying between King George V

Land (q.v.) and Cape Adare in lat. 70° S. and long. 160° E. See Antarctic Exploration.

Oath. In law, an appeal to God to witness the truth of evidence given. In English courts a witness must, before he gives evidence, take an oath that what he is about to say shall be the truth, the whole truth, and nothing but the truth. The witness ought to take the oath in the form that is binding on his conscience. If any witness does not believe in the oath, or if to take an oath is contrary to his religious belief, he is allowed to affirm, i.e. to make solemn promise that he will speak the truth, etc. The old form of Christian oath was when the swearer placed his right hand on the Holy Evangelists (i.e. the Four Gospels). This is called the corporal oath. In England, for a very long time, the witness had to kiss the book. In Scotland he raised his right hand and took the oath. By the Oaths Act, 1909, the English form is for the witness to take the book in his uplifted hand and repeat the words of the oath.

There are extra-judicial oaths, the principal of which is the oath of allegiance, which has to be taken by soldiers, M.P.s, privy councillors, magistrates, and certain others whose employment is of a public nature. See Perjury.

Oatlands. Estate near Weybridge, Surrey, England. Here Henry VIII built a magnificent palace, surrounded by a large hunting park. It was improved by James I, but after the time of Charles I it fell into decay. The estate came later to the earl of Lincoln, who, about 1720, built another house in the park, on a different site. This was sold in 1794 to the duke of York, son of George III, who rebuilt the house, which had been damaged by fire in 1793. In 1857 the house became an hotel. The grounds contain a remarkable grotto, and a cemetery wherein the duchess of York buried her domestic pets. The park, much reduced in size, is noted for its cedars.

Oats (*Avena sativa*). Cultivated cereal of the natural order Gramineae, whose native country is unknown. There is every reason to believe that it has been derived by selection and cultivation from the wild oat (*A. fatua*), which is found throughout Europe (including Britain), in Siberia, N.W. India, and N. Africa. Prof. Buckman, experimenting with the wild plant, found that in the short period of eight years he was able to produce from it a crop not to be distinguished from the cultivated varieties known as Tartarian and potato oats.



Oats. Heads of *Avena sterilis* in fruit

Cultivated in Europe up to about 70° N., oats are sown usually in spring, the land being treated with phosphates at the same period. If sown in drills, 2½ bushels of seed are used to the acre, but if sown broadcast twice the amount is needed. The young plants are harrowed and rolled, and it is an advantage to top-dress with nitrate of soda—1 cwt. per acre. The crop is cut before the grains are ripe, and as soon as the field has become pale yellow. An average yield per acre is 40-60 bushels of grain, and 30 cwt. of straw. Freed from the husks, the grain is known as grits, and for human food is rolled or ground to meal of various fineness and high nutritive value. The percentage both of fat and albuminoids is much higher for oats than for wheat. The straw, used in chaff and as green fodder, has a similar advantage over wheat straw. The finest oats are grown in N. Britain; in the S. they are grown mostly for green fodder, being sown in July and reaped in autumn. See Inflorescence.

Oaxaca or OAJACA. Maritime state of S. Mexico, bounded S. by the Pacific Ocean. It is largely covered by the wooded spurs of the Sierra Madre. There are numerous small streams. Sugar, coffee, cotton, tobacco, and cocoa are cultivated, and cattle rearing is carried on. A rly. extends from the N. to the capital, Oaxaca; a second line in the E. crosses the isthmus of Tehuantepec to Puerto Mexico on the Gulf of Campeche. Area, 35,382 sq. m. Pop. 1,060,000.

Oaxaca OR OAJACA. Capital of the state of Oaxaca, Mexico. It contains a massive cathedral, an institute of arts and sciences, and a natural history museum. Jewelry, cotton goods, chocolate, and fibre are manufactured. Oaxaca has rly. communication with Mexico city. On Monte Alban, near by, and on other sites in the valley, are remains of ancient Mexican civilization. Pop. 33,000.

Ob OR OBI. River of Asiatic Russia. It is formed by the union of the Biya and Katunya, rising in the govts. of Tomsk and Tobolsk, in the little Altai range. It first flows N., next N.W. to its junction with the Irtysh, then N., and at Obdorsk turns sharply E. and discharges into the gulf of Ob, an arm of the Arctic Ocean, 600 m. long and 60 m. broad. The length of the Ob is 2,100 m. or (including the Irtysh) 2,500 m.

Obadiah. Minor prophet. His book predicts the utter ruin of Edom, and the coming of the Day of the Lord.

Oban. Mun. burgh, seaport, and watering-place of Argyllshire, Scotland. It is 113 m. from Glasgow,



Oban arms

being served by both the N.B. and Cal. Rlys. It is a great tourist centre, and has a splendid harbour, protected by the island of Kerrera. The buildings include a modern Roman Catholic cathedral. Near are the ruined castles of Dunstaffnage and Dunolly. It was made a burgh in 1811. Market day, Wed. Pop. 6,600.

Ob-Arctic Railway. Proposed rly. across Arctic Russia. The line is to start from Obdorsk on the Ob and cross the Ural Mts. to a port E. of the mouth of the Pechora, probably near the entrance to Khaipudirskaya Bay. It is to comprise 300 m. of narrow-gauge line. This proposal is alternative to a greater proposition to connect Chemashevskoe farther up the Ob with Soroka on the Murmansk rly., and on the White Sea. A third proposal is to extend the Vyatka-Kotlas line to Soroka. All these proposals are intended to connect the Ob valley with an Arctic outlet.

O.B.E. Abbrev. for the Order of the British Empire (*q.v.*), and for an Officer of the Order.

Obeah OR OBI. West African term denoting a form of negro witchcraft practised in some W. Indian islands and southern United States. The obeah-man or obeah-woman employs incantations, and charms such as bottles contain-

ing feathers, pebbles, plants, and rags, sometimes resorting to poison. See Fetichism; Juju; Magic; Voodoo.

O Becse. Town of Yugoslavia, in the Bačka, formerly in Hungary. Situated on the right bank of the Theiss (Tisa), 45 m. S. of Szeged, with communications by road, rly., and river, it has an important trade in wheat and contains flour mills. The Slav name is Stari Bečej. Pop. 19,400.

Obelisk (Gr., spit for roasting). Tapering pillar-stone, especially in ancient Egypt. Usually a four-sided monolith of pink syenite, with a base-width one-tenth of its height, and a copper-sheathed pyramidal apex, it bore incised

Barnsley; Cleopatra's Needles; Heliopolis; Karnak; Manishtusu; Pylon; Shalmaneser.

Oberammergau. Village of Upper Bavaria. It is prettily situated in the valley of the Ammer, 45 m. S.S.W. of Munich, with which it is connected by an electric rly., opened in 1900, from Murnau. The village is famous for the Passion Play (*q.v.*) which was held here periodically since the middle of the 17th century until 1910. Owing to the Great War it was not given again until 1922. Until 1830 the play was presented in front of the church; it was then removed to a meadow at the end of the village. The stage is open, framed in a background of fir-clad hills. The



Oban, Scotland. Town and harbour from the south-west

hieroglyphs upon each face. They stood in pairs before temple portals, indicative of sun-worship. This colossal type was introduced by Senusert I (XIIth dynasty). One remains at Heliopolis (Jeremiah 43); others, once there, are now in New York and London. One of Hatshepsut's at Karnak still stands. The tallest extant, 105½ ft., is in Rome; Paris has one of Rameses II from Luxor. Bankes brought one from Philae to Kingston Lacy, Dorset, 1815, which assisted Champollion to decipher the hieroglyphs. See

auditorium, entirely covered in after 1890, contains 4,000 seats, arranged in tiers, and cost £10,000.

The affairs of the village are controlled by a burgomaster and council elected by the householders. The inhabitants, about 1,400 in number, are mostly peasants and carvers in wood. On a knoll behind the village rises The Group of the Crucifixion, presented by Ludwig II in memory of his visit in 1871. Near by is the Benedictine monastery of Ettal, founded in 1330, dissolved in 1803, and rebuilt after a fire in 1844. Situated on the old



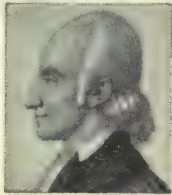
Oberammergau, Bavaria. Stage and Crucifixion Scene of the Passion Play

trade route between Venice and Augsburg, Oberammergau was once of considerable importance.

Oberhausen. Town of Germany, in Prussian Rhineland. Near the right bank of the Rhine, 44 m. by rly. N. of Cologne, it is a junction of the Cologne-Hamburg and Wesel-Emmerich rlys. It has extensive iron, steel, zinc, and metal foundries, besides manufactures of glass, porcelain, and chemicals. The Gutehoffnungs-Hütte, one of the largest iron and steel works of the Ruhr district, employs 24,300 workmen. Oberhausen became a town in 1875. Pop. 90,000.

Oberleutensdorf. Town, formerly in the Bohemian prov. of the Austrian Empire, now known as Litvinov Horní (q.v.).

Oberlin, JEAN FRÉDÉRIC (1740-1826). Alsatian pastor and philanthropist. Born Aug. 31, 1740, at Strasbourg, he studied at the university, and in 1767 became pastor of Waldbach, in the Steinthal, Ban-dela-Roche, a barren tract on the borders of Alsace-Lorraine. Here he built schoolhouses, introduced improved methods of agriculture, laboured devotedly to improve the well-being of the people, and preached a mystical piety. Awarded the medal of the Legion of Honour in 1819, he died June 1, 1826. See Life, Josephine Butler, 1882.



J. F. Oberlin,
Alsatian pastor

Oberon (Fr. *Auberon*, Ger. *Alberich*, ruler of the elves). King of the Fairies. He appears as king in the Charlemagne romance of Huon of Bordeaux, and as the dwarf, Alberich, of the Nibelungenlied, long before he was, as it were, re-created by Shakespeare in *A Midsummer Night's Dream* (q.v.).

Obesity. Excessive deposit of fat in the body. Corpulence, or general overgrowth of fat in the body, results from some disorder of nutrition, probably due both to excessive absorption of the fat-producing constituents of food and to incomplete combustion of fat in the tissues. Some persons remain thin in spite of being large eaters, and others become corpulent though they take food sparingly. In some cases heredity is a marked factor. Excessive obesity leads to shortness of breath, interference with the action of the heart, and difficulty in walking. Corpulent persons should avoid taking too much food, and particularly should

reduce those articles of diet which contain much starch or sugar. Several diets have been advocated for lessening obesity. See Diet.

Obiter Dictum (Lat., said by the way). Legal phrase denoting an opinion expressed incidentally by a judge in the course of his judgement, which is not an integral part of the judgement, i.e. is not necessary for the decision of the case. Though it may be valuable, owing to the learning of the judge who pronounces it, a dictum which is merely obiter is not binding in any other court of the same or inferior jurisdiction. See Birrell, Augustine.

Object. In grammar, a word, phrase, or clause used substantively in immediate dependence on a verb, as denoting that on or toward which its action is directed. As an example, in the sentence "I killed him," him is the object of the verb killed. In optics the object glass is the lens or system of lenses, also known as the objective, placed at the end of a telescope or microscope nearest the object being examined. In philosophy, object is the antithesis of subject, and denotes the totality of external phenomena observed by the individual.

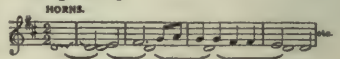
Object teaching is a method of instruction in which illustrative objects are employed, e.g. as in a kindergarten. The object ball in billiards, pyramids, etc., is the ball which is designed to be hit by the cue ball, i.e. the ball which is being directly aimed at. In medicine, object blindness is a condition in which objects may be seen distinctly, but are of no significance to the mind. In astronomy, object metal is the principal mirror of a reflecting telescope.

Oblates (Lat. *oblatus*, offered, part. of *offerre*, to offer). Word used in various monastic senses. Originally oblates were children brought to the monastery by their parents and dedicated to the religious life. Later they were lay brothers. Still later, they were associate members, in some cases known as confratres or tertiaries, who observed a simple rule of life, and devoted themselves and their fortunes to the service of the community. Henry VI of England was a confrater of the abbey of S. Edmundsbury. In the Roman Catholic Church, the title oblates has been assumed by congregations of priests devoted to preaching, conducting missions, and education. Among women are the congregations devoted to high school teaching. See Monasticism.

Obligation. Term used in English law. It describes any act or instrument whereby a person,

called in England the obligor, is bound by law to do or refrain from doing something. The person in whose favour the obligation runs is called the obligee.

Oblique Motion. Term used in music. When one part or voice stands still while another moves, the motion of the latter is termed oblique, e.g.



See Motion.

Obock or **OBOK.** Port on the Red Sea. Situated on the N. shore of the Bay of Tadjoura, opposite Jibuti (q.v.), it was acquired by France in 1856, officially annexed in 1862, but not occupied until 1884. Formerly an independent sultanate, it forms part of the French Somali Coast Protectorate.

Oboe. Italian form of the name of the double reed musical instrument, the hautboy (q.v.).

Obolus. Ancient Greek silver coin alloyed with copper. It was equal to about 1½d. in English money, and six obols made a drachma (q.v.).

Obra. River of Poland, in Posen. It rises near Kosmin, flows W. and N.W. to join the Warthe (Warta) near Schwerin, in a maze of swamp and bog. Length 130 m.

Obregon, ALVARO (b. 1880). Mexican president. Born in Sonora, he became a prosperous agricul-

turist with advanced ideas and marked sympathy with the Indians. In 1912 he recruited and commanded a troop which helped to suppress Orozco's rebellion, and in 1913 he joined Carranza, defeating Huerta's forces at Santa Rosa. In command of the Constitutional army, he won several battles and entered Mexico City, Aug. 15, 1914. A supporter of Carranza, he carried out successful campaigns against Villa in 1915, and took part in the negotiations between Carranza and the U.S. government in 1916.

During this period of unrest Obregon had made himself Mexico's most prominent soldier. After Carranza's murder a provisional president was elected, but he soon gave way to Obregon, who, the most powerful man in the country, was elected without opposition in Sept., 1920. He set to work to restore order, declaring against Bolshevism. He was succeeded by P. E. Calles, 1924.

Alvaro Obregon, Mexican president



O'Brien, WILLIAM (b. 1852). Irish journalist and politician. Born Oct. 2, 1852, he became a



William O'Brien,
Irish journalist
Mills

reporter for The Cork Daily Herald, and a contributor to The Freeman's Journal. In 1880 he founded United Ireland, a paper of advanced Nationalist views. Indefatigable in working for the Irish cause, he was nine times prosecuted for political offences and spent over two years in gaol. Nationalist M.P., 1883-95, and member of the land conference of 1903, he advocated strongly a policy of conciliation and toleration, founding for the purpose the All-for-Ireland league. M.P. for Cork city, 1910-18, he and other members of the All-for-Ireland league withdrew from Parliament at the general election in 1918.

O'Brien, WILLIAM SMITH (1803-64). Irish leader. Born Oct. 17, 1803, son of Sir Edward O'Brien, a landowner of co. Clare, and educated at Harrow and Cambridge, he became M.P. for Ennis in 1828, and represented the county of Limerick 1835-48. In 1843 he joined O'Connell's association for the repeal of the Union, but seceded in 1846 and founded the Irish Confederation, with a more violent policy. When the Habeas Corpus Act was suspended in Ireland in 1848, O'Brien attempted an armed rising which failed. He was tried and sentenced to death, but the penalty was commuted to transportation to Tasmania. His health giving way, he was released in 1854, and allowed to return home in 1856. He died June 18, 1864. See Young Ireland, C. G. Duffy, new ed. 1896.



W. S. O'Brien

Obscenity. In English law, conduct or publications tending to corrupt or deprave public morals. Such conduct or publication is an offence. A borough council may make by-laws against the use of obscene language or gestures to the annoyance of any person in any public place. By the Indecent Advertisement Act, 1889, it is an offence, punishable by a fine of 40s. or a month's imprisonment, to exhibit, or affix, or offer to any member of the public in a public place

any obscene picture or printed or written matter. An obscene libel is indictable at common law. To send through the post a package bearing on the outside obscene words, designs, etc., is an offence under the Post Office Act, 1908, and is punishable by a fine not exceeding £10, or imprisonment with or without hard labour not exceeding 12 months.

Obscurantist. Term applied derisively at the Revival of Learning to the clerical opponents of learning and education. It appears to have gained currency through the publication in 1515 by Ulrich von Hutten's circle of the *Epistolae obscurorum virorum*, a satire on certain monks of Cologne who wished to destroy all Rabbinical literature. Obscurantism is now applied to their opponents by the supporters of traditional beliefs in theology and politics, especially to those who desire the suppression of what they consider subversive teaching, such as modernism, republicanism, free thought, etc.

Observation. The discriminate, retentive, and intelligent registration of things and happenings in the outer world. The faculty of accurate observation is a preliminary condition of science, and is of incalculable value in life.

When the faculty of observation is highly developed, there are three elements or components which may be distinguished, though they are in reality inextricably intertwined. (a) There is sensory acuteness—an eye to see. Many children have an almost photographically precise observational power, which is partly an inborn gift, like a musical ear, but is also an expression of wide interests and inquisitiveness, and of a mind whose receptivity has not been dulled by the trivial, or overloaded with a plethora of pictures. Even when there is no special gift of observing, the average capacity is usually there, and both educational experiment and everyday experience show that this can be greatly developed. Early practice in recognizing flowers and birds, in analysing the jetsam of the shore and the stones by the wayside, and so forth, educates the power of precise seeing.

(b) Inseparable from sensory acuteness is the power of clear-cut perception, i.e. of building-up lucid mental pictures of what is seen. This implies discrimination, a knowing what one is looking at, the introduction of a more definite intellectual element into the sensory photograph. As a matter of fact, perceptions continually blend with our sensations. In perception we see the different parts of a thing

making up a related whole, and we see this whole in relation to other parts of the picture. The very beginning of a knowledge of the outer world is a process of selecting from our thought-stream certain groups of vivid sense-impressions, and if we are to go on to know, the process of selecting must continue.

(c) There is a third element in observation of a still higher order, namely, conceptual. The mind sees what it brings with it, the power of seeing. Those who have thought over things, who have, as we say, ideas about them, who have what we may call preconceptions, are likely to see more than the thoughtless and the ignorant—provided always that they keep an open mind as well as an open eye, and do not allow prejudice or desire to influence their vision. The botanist who knows the flora of a countryside is likely to see much more than the casual observer; his store of concepts exerts an influence on his perceptual facility.

In the mind of the scientific observer, even when precision becomes habitual, there is always caution; he is more aware than others of the possibilities of error; he has learned how easy it is to see what one wishes to see. He has ever before him the test of scientific knowledge, that it must be verifiable by competent observers in similar circumstances.

J. Arthur Thomson

Observation Post. Military term denoting a position from which it is possible accurately to observe the effect of artillery fire. In modern warfare the guns frequently fire from positions from which the target is invisible. Under these conditions intimate contact is necessary for absolute accuracy of artillery fire, and an artillery officer is stationed in a forward observation post, often in the infantry trenches, whence he is in communication with the battery. See Carso, Battles of the.

Observatory. Building constructed and used for the purpose of making astronomical, meteorological, or other kindred scientific observations. Astronomical observatories were founded in China in very early times, and one was built at Alexandria about 200 B.C.

The most important parts of an astronomical observatory are the cupolas or domes which contain the telescopes. Sliding shutters are so arranged that the telescopes can be pointed from the horizon to the zenith, while by means of the rotation of the whole dome on rollers it is possible to carry out an observation of any point in the heavens. In observations where

the telescopes are of great size the floors of the domes are made to rise by means of hydraulic power, to enable the observer to accommodate himself to the changing height of the instrument. A separate building contains the transit instrument, which, together with a sidereal clock, forms an indispensable part of the equipment of an observatory. The transit instrument is fixed to point N. and S., so that it can only move up and down, and it is used for observing the time a star crosses the meridian of the instrument. This observation gives the means of checking the sidereal clock, since the time the star should be on the meridian is known from other considerations.

The Lick Observatory is built in the pure, dry atmosphere of Mt. Hamilton, at an alt. of 4,250 ft. The Boyden Observatory, built by Harvard College out of funds largely provided by a legacy left by Uriah Boyden for the purpose, is established at Arequipa, Peru, at an alt. of 8,060 ft. The Lowell Observatory was established in 1894 by Professor Percival Lowell at Flagstaff, Arizona, at a height of 7,000 ft. The Carnegie Solar Observatory was built in 1905 on Mt. Wilson, California.

The Royal Observatory at Greenwich was founded in 1675, and, during the 18th century it was the only observatory making systematic observations of celestial objects. The observatories at Edinburgh and Dublin are also royal observatories. In Great Britain there are eight important meteorological observatories, at Kew, Greenwich, Falmouth, Oxford, Stonyhurst, Armagh, Valencia, Glasgow. *See* Frontispiece to Vol. I; also Astronomy; Lick; Meteorology; Telescope.

Observatory Ridge. Ridge of Belgium, in the prov. of W. Flanders. It lies $1\frac{1}{2}$ m. S. of Hooze and just S. of Sanctuary Wood. It figured prominently in the Great War, and along with Hooze and Sanctuary Wood passed into the hands of the Germans in the autumn of 1914. It was captured by the Allies on July 31, 1917. The Canadians have erected a war memorial here. *See* Ypres, Battles of.

Observer. Official term in use in the Royal Air Force to denote any member of the crew of an aircraft whose duties are distinct from those of the pilot, and who is charged generally with making aerial observations

of any kind. Observers receive a thorough and extensive training of a highly specialised type in military reconnaissance, direction by wireless of artillery fire, bombing, and aerial gunnery. *See* Airmanship.

Observer. THE. Oldest Sunday newspaper of London, devoted primarily to the publication of Saturday's news on the daily paper model. Established Dec. 4, 1791, it achieved great success under the control of William Clement. The paper remained in his family until 1870, when it passed into the hands of Julius Beer. Viscount Northcliffe owned it from 1905-11, reducing the price to 1d. in 1906; previously it had varied between 6d. and 2d., at which it stood between 1895 and 1906. The 1st Viscount Astor acquired the property later, and passed it on to his son, William Waldorf (later Viscount) Astor, M.P. The editors have included Edward Dicey (1870-89), H. D. Traill (1889-91), and, since 1907, J. L. Garvin. The Observer was one of the pioneers of illustrated journalism.

Obsidian. In mineralogy, name given to a volcanic vitreous rock consisting of a combination of silica, aluminium, calcium, iron, potassium, and sodium. The mineral, which resembles dark glass, is extremely hard and brittle, and is usually black or dark grey, although occasionally brown or green. It is found in most volcanic regions of the world, and on account of its hardness and capability of taking a high polish, it was used by primitive man for arrow and spear heads, knives, ornaments, and mirrors.

Obstetrics (Lat. *obstetriz*, midwife). Art of helping women in pregnancy and childbirth. In the human species the duration of normal labour with a first child is usually from 20 to 24 hours, but after the first delivery the process is easier, and does not usually last more than about 12 hours. Labour is divided into three stages. The first stage is one of preparation for the delivery, and consists in the gradual dilatation of the neck of the womb; the second stage is the period from the full dilatation of the neck of the womb to the birth of the child; and the third stage is the delivery of the afterbirth, or placenta and membrane.

As soon as the child is born, the eyes should be wiped clean with a little cotton wool soaked in a mild antiseptic solution. The cord which still connects the child with the placenta should be ligatured and divided after pulsation has ceased. The child in most cases breathes or cries freely; if not,

steps should be taken to promote respiration. The period following the birth of the child is known as the puerperium, during which the diet should be light and nourishing. The mother should remain in bed for at least 10 days. The child should be put to the breast within 12 hours after delivery.

Obturator (Lat. *obturare*, stop up). Technical term describing the packing employed in the breech block of B.L. (breech loading) type of guns, to ensure that there shall be no escape of gas between the breech block and barrel. In contradistinction to Q.F. (quick firing) guns, B.L. guns employ a propellant charge merely contained in a fabric bag. Consequently the actual joint between the breech block and the barrel has to provide complete sealing against the pressure of the gases when the charge is fired. In the British B.L. guns the breech block has a separate head next the charge, and between this and the main portion of the block a ring of impregnated canvas or copper gauze, termed an obturator, is placed. When the charge is fired, the pressure on the head of the breech block causes it to compress the obturator, and expand it against the walls of the chamber. *See* Ammunition; Breech Block; Guns; Ordnance.

O.C. Abbreviation for Officer Commanding.

Occasional Conformity. Practice by which many Nonconformists avoided the penalties and disabilities of the Test and Corporation Acts. These two Acts forbade anyone to hold any public office unless he took the Sacrament according to the rites of the Church of England. Many Nonconformist office holders did this now and again. Attempts in Anne's reign to stop this practice failed, owing to the opposition of the House of Lords, but in 1711 the Occasional Conformity Act made it illegal. In 1718 the Act was repealed and the practice renewed. However, from 1727 to 1829 it was unnecessary, as Nonconformist office holders were protected by an annual Act of Indemnity. *See* Toleration.

Occlusion. Term given to the power of certain solids to absorb gases. Palladium will absorb 935 times its own volume of hydrogen at red-heat, and nearly 400 times at normal temperatures, charcoal 90 times its volume of ammonia, platinum black 250 times its volume of oxygen, etc. Occlusion is a form of molecular attraction, but a definite chemical compound of the solid and the gas is not



Observer. Badge worn on left breast

necessarily formed. The power that finely divided charcoal has for absorbing gases is made use of for disinfecting purposes. See Absorption.

Occultation. In astronomy, the eclipse of a star or planet by the moon or another planet. Occultation observations are now chiefly used for determination of the moon's angular diameter. See Eclipse.

Occultism (Lat. *occultus*, hidden). Term applied to any theories, doctrines, arts, or practices dealing with alleged phenomena not explained by physical science, but attributed to supernatural or non-natural causes. See Divination; Magic; Necromancy; Spiritualism; Theosophy; Witchcraft.

Occupancy. Term used in English law. It means taking possession of something, whether land or chattels, which belonged to nobody. It was only recognized as a legal title to land in the case of tenancies *pur autre vie* (old Fr. for the life of another). When an estate was granted to A for the

life of B, and A died before B, anybody who could first go in and occupy the land might keep it for the rest of the life of B. But by the Wills Act, 1838, this has been altered. A can now devise the estate by his will; or, if he does not so deal with it, it passes with the rest of his property to his executor or administrator. With regard to chattels, anybody authorized by the crown may seize and keep goods belonging to an alien enemy. In this way prizes captured by privateers became lawfully theirs. Wild animals and fish at sea also become the property of those who capture them.

Occupation. Legal term having two meanings: (i) a trade or means of getting a livelihood, e.g. the occupation of a carpenter. In a few legal documents, the principal of which are bills of sale and the documents relating to marriages, it is essential that the parties shall be described by reference to occupation. (ii) Possession of land or chattels.

OCEAN AND OCEANOGRAPHY

Marion I. Newbigin, D.Sc., Author of *Modern Geography*

This Encyclopedia contains articles on the world's oceans and seas, e.g. Atlantic; Indian; Pacific; Mediterranean; North Sea, etc. See also Arctic Exploration; Challenger; Marine Biological Research

Oceanography is the science which deals with the form of the ocean floor, the nature of the sediments covering it, and the composition, temperature, and movements of the contained waters.

The elaborate series of soundings carried out by deep-sea expeditions have demonstrated that the primary feature of the earth's relief is the existence of depressions, the ocean basins, and of elevations, the continental platforms. But the latter do not, in their entirety, form land areas, for their margins tend to be submerged, producing the so-called continental shelves. In other words, there is more water than can be held in the ocean basins, and the surplus overflows the encircling lands. That the continental shelves are really part of the continental platforms is suggested, among other points, by the fact that the relief features characteristic of land surfaces, such as river valleys, are often prolonged across them; that their surface tends to be covered by detritus obviously derived from the adjacent land mass, and that there is sharp and sudden change of slope at their seaward edge, where the ocean floor plunges abruptly down to the great depths. On the other hand, the ocean basins are covered by a depth of water notably greater than that overlying

the continental shelf; their deposits are purely marine in origin, or at least their land origin is not apparent; their relief is markedly different from that of land surfaces or of the continental shelf.

The width of the continental shelf varies in different parts of the world; broadly speaking, however, 50 m. marks the limit of breadth. There is variation in the depth of the water which covers it, but as a general rule the sudden steepening which marks the transition between shelf and ocean basin occurs at or near the 100 fathom limit. Some 10,000,000 sq. m. of the sea floor are reckoned to be covered with such shallow water, and thus to rank as part of the continental shelf. Put in another way, while the ocean area includes about 143,000,000 sq. m. as contrasted with a land area of 54,000,000 sq. m., only some 133,000,000 sq. m. constitute the ocean basins proper.

Ocean Plains and Deepes

The oceans are not great uniform hollows; although their form is markedly different from that of the land masses, they have a relief of their own. In most cases the floor over vast areas seems to be an almost regular plain, but in places, especially in the Pacific Ocean, there are depressions which sink very notably below the general

level, and usually have more or less steep sides. Such depressions are called deeps, a deep being defined as an area in which the depth exceeds 3,000 fathoms. Elsewhere, especially in the Atlantic, great swells rise from the ocean floor, forming areas of relatively shallow water. Such elevations are called rises, and are defined as areas in which the depth is 2,000 fathoms or less. Contrary to what might be expected, the deeps tend to occur near the continental margins, while the rises are often far from land.

Volcanoes on the Ocean Floors

Active volcanoes often occur on the ocean floors, so that volcanic cones may be built up to a height sufficient to bring their surface to sea level, or even above it. Such volcanic cones are commoner in the Pacific than elsewhere, and they are more abundant in the deeper western than in the shallower eastern areas. Now, since volcanoes, whether on land or in the sea, are associated with earth movements, being, like earthquakes, but obvious and visible signs of great and deep-seated changes, it seems clear that the present oceans must be regarded as areas of subsidence, due to the collapse of earth blocks, while the present continents are areas which have either been left standing when other parts collapsed, or have been directly uplifted.

The period called tertiary by geologists was one in which extensive mountain building took place, and it is natural to associate the great deeps of the existing oceans with the tremendous uplift of the tertiary mountain chains. It is noteworthy that the Pacific is practically ringed with mountain chains, with which active volcanoes are associated, while the greatest deeps known occur also in that ocean.

While the composition of seawater salts remains everywhere the same, the salinity varies greatly. Broadly speaking, the salinity is high where the temperature is high, evaporation great, and the amount of fresh water supplied by rainfall or rivers small, and low where the reverse conditions prevail. On an average the amount of dissolved salts is 35 per thousand parts of water, but the actual conditions vary greatly in different areas.

Temperature conditions are complex, for both surface conditions and those prevailing at the various depths have to be considered. Broadly speaking, surface temperatures depend upon sun heat, so that the water is ice-cold near the poles, and reaches 80° at the

equator; but in detail the conditions are modified by the prevailing winds, the neighbouring land-masses, and other causes. The temperature conditions below the surface are exceedingly complicated, but the essential point is that everywhere, even under the equator, ocean water at great depths is uniformly cold. Below about 2,000 fathoms the temperature is little above 32° F.

The life of the ocean is a subject of very great interest, and a great elaboration of methods has now made it possible to study in considerable detail the organisms of the different depth zones. One of the most interesting points is the proof that the visible rays of the sun penetrate downward to over 3,000 ft. Thus, throughout this belt, described as the photic zone, green plants can live. Below the lower limit of sun penetration only bacteria among plants can live, and thus below a depth of 3,000-4,000 ft. all animals must be carnivorous.

The animals of the ocean are conveniently divided into those which live freely in the water, whether at the surface or in the depths, forming the Plankton, and those which are attached to the sea-floor or crawl over it, forming the Benthos. The bottom-living animals are most numerous in shallow water, and decrease in number and species in the deeper areas, more especially in regions remote from land. This is due to the fact that the shallow water forms have not only the marine plants as a basal food supply, but obtain also much food from the waste of the land, while in the great depths at a distance from land food must be very scanty. See The Depths of the Ocean, J. Murray and J. Hjort, 1912; The Ocean, J. Murray, 1913.

Oceania. Collective name for the groups of islands in the South Seas, or S. and Central Pacific Ocean.

Physically, Oceania includes five groups of islands: (1) The Australasian Festoon stretches from New Guinea to Macquarie Island, and includes the Papuan Islands, New Caledonia, and New Guinea; the natural features of this group are cognate with those of Australia; the Loyalty Islands are coralline, the Solomons volcanic. (2) The Micronesian Festoon extends from the Caroline Islands to the Friendly Islands and includes Fiji and Samoa; the islands rest on the outskirts of a submarine platform connected with Australia. (3) The Pelew-Ladron Festoon includes the Volcano Islands and forms a link along the E. of the China Sea between Japan and the East

Indies; it belongs to Asia. (4) The Central Pacific Chain rests on an isolated submarine platform, and includes Hawaii and the Ocean Islands. (5) The S. Pacific Chain includes Easter Island on the E., the Society, Cook, and Phoenix Islands, and Fanning Island.

The islands of Oceania are also loosely grouped in relation to their inhabitants into Melanesia, Micronesia, and Polynesia (*q.v.*); this grouping ignores New Guinea, New Zealand, and New Caledonia, as well as the relation of the islands to the relief of the floor of the Pacific. Politically, Oceania is divided among Britain, France, Japan, Chile, and the U.S.A.

British Oceania includes the crown colony of Fiji, the islands administered by the High Commissioner for the Western Pacific, the Cook and other islands annexed to New Zealand, including the Auckland and Chatham Islands, Norfolk Island, which is Australian, as well as the former German islands now administered under mandate by Australia, New Zealand, or Great Britain.

French Oceania comprises New Caledonia and its dependencies, Tahiti, and the rest of the Society Islands, the Marquesas, Low Archipelago, the Leeward Islands, and the Gambier group. The New Hebrides are jointly British and French. Japanese Oceania consists of the former German islands

N. of the equator, the Pelews, Ladrões, Carolines, and the Marshalls. Hawaii is the chief U.S.A. group in Oceania; Guam, Tutuila, and other Samoan islets complete the U.S.A. Pacific possessions. Easter Island belongs to Chile.

Ocean Steamship Company. British steamship line. Founded in 1875 with a service to China, the line was an amalgamation of



Ocelot. Specimen of the American species of wild cat
W. S. Borridge, F.Z.S.

several smaller companies, and soon carried on a brisk trade between Europe and the Far East. In 1902 the China Mutual Steam Navigation Company was absorbed. In 1921 the principal sailings of the line were regular fast services of cargo steamers to America and the Far East.

Oceanus. In Greek mythology, the god of the ocean, the father of all things. The name was also given to the river supposed to encircle the whole earth, which was regarded as being flat. At a later date, the term Oceanus was applied generally to the greater seas outside the Mediterranean.

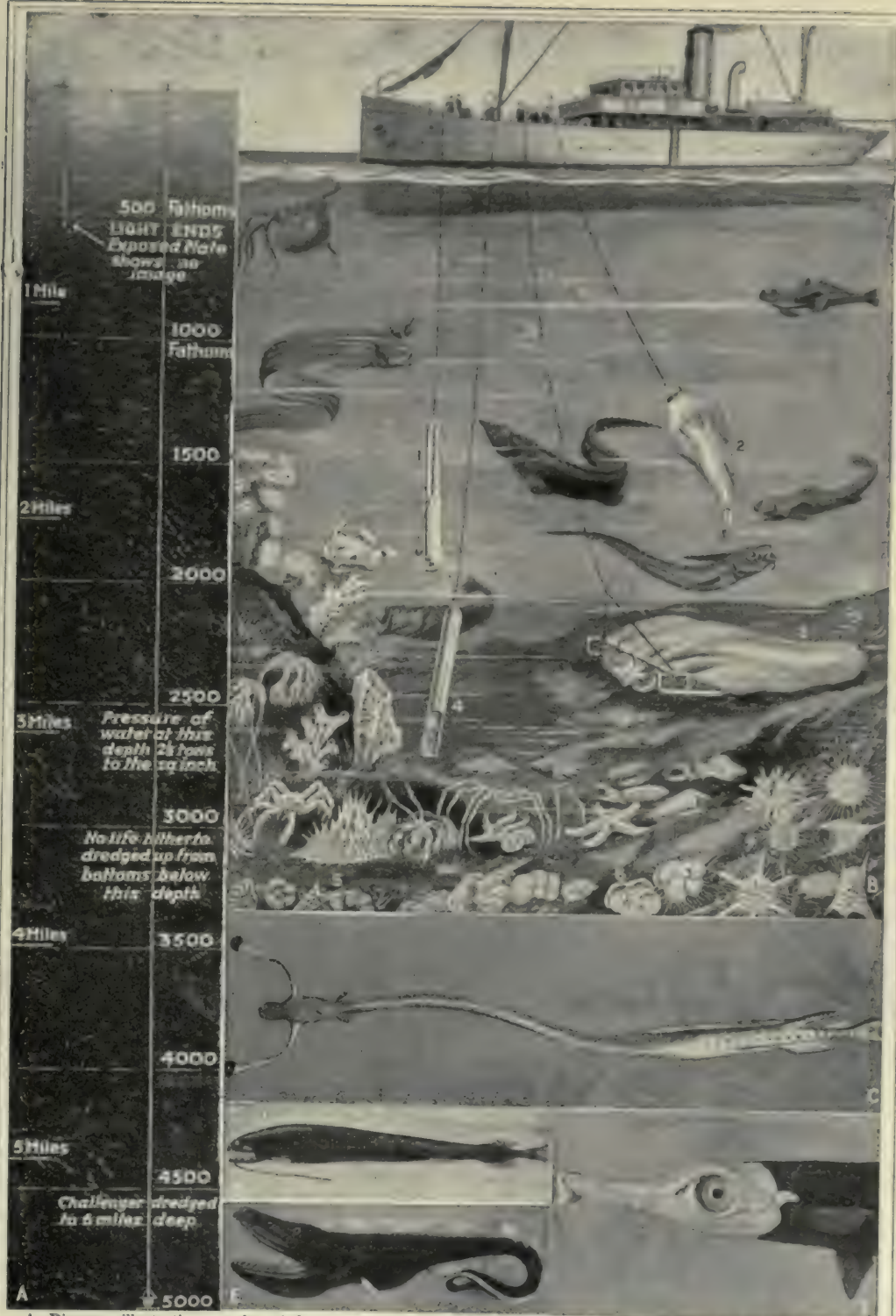
Ocelot (*Felis pardus*). Species of wild cat occurring in tropical America. It has tawny fur, beautifully marked, and is usually nearly 3 ft. long. It spends much of its time in the trees, where it preys upon birds and small mammals. In captivity it is morose and savage. Ocelot is the Europeanised form of the Mexican name for jaguar. Pron. Ô-sêlo.

Ochil Hills. Range of hills in Scotland, principally in Perthshire, but also occupying parts of the cos. of Clackmannan, Kinross, and Fife. They trend 25 m. N.E. from Bridge of Allan, in Stirlingshire, to the Firth of Tay, and enclose many valleys and glens of great beauty. The principal summits are Ben Cleuch (2,363 ft.) and King's Seat (2,111 ft.). Coal and other minerals abound. See Alva.

Ochiltree, EDIE. Character in Scott's novel *The Antiquary*. A king's bedesman or licensed beggar, outspoken, shrewd, and humorous,



Ochiltree, the outspoken beggar in Scott's novel *The Antiquary*. From a drawing by Sir W. Allan



A. Diagram illustrating results of deep-sea research. B. Some modern methods of exploring the depths of the North Atlantic. 1. Instrument for obtaining samples of water for analysis. 2. Nansen's deep-sea net. 3. Trawl. 4. Instrument for taking soundings, temperature, and samples of ocean bed. 5. Globigerina ooze with

6. Globigerina and, 7. radiolarians, all highly magnified. C. Fish with luminous head organs found at a depth of from 1,000 to 2,000 fathoms. D. Fish with highly sensitive organs of touch. E. Fish with distending stomach, capable of holding prey larger than itself. F. Fish with entirely phosphorescent head

OCEANOGRAPHY: METHODS AND RESULTS

OF SCIENTIFIC DEEP-SEA EXPLORATION

he was suggested by Andrew Gemmels, a native of Old Cumnock, who fought at Fontenoy, and afterwards assumed the blue gown of the bedesman.

Ochre. Mineral paint consisting chiefly of hydrated iron oxide. From red to yellow in colour, it is a clay, and the variation in colour depends largely on the proportion of iron oxide present, though also to some extent on the clay base and impurities. Ochres are found in Oxfordshire and other parts of England, France, Germany, the U.S.A., etc. For commercial purposes the ochre is dried, ground, and mixed with oil, the quality of which has an important effect on the quality of the finished product. Caicination produces a definite deeper tone in the ochre, and is often resorted to for that reason. Yellow ochre is most common, but many ochres are now artificially prepared.

Ochrida or **OKHRIDA.** Lake and town of Yugo-Slavia. The lake lies in the S. of Serbia, high among the mts., on the Albanian frontier. 18 m. long by 8 m. in breadth, it has a depth of almost 1,000 ft., and is drained by the Black Drin. The ancient Via Egnatia connected the N. end of the lake with the Adriatic coast by the Skumbi valley. The town, situated on the N.E. shore of the lake, is the seat of a Greek Orthodox bishop. It is connected by the modern equivalent of the Via Egnatia with Monastir. After the evacuation of Monastir in 1915, the Serbians retreated through Ochrida, which was finally recovered by the Allies in Sept., 1918. Pop. 12,000.

Ochterlony, SIR DAVID (1758-1825). British soldier. Born at Boston, U.S.A., Feb. 12, 1758, he entered the service of the E. India Co. in 1777. He saw a good deal of fighting in the Maratha and other wars, and won distinction by his defence of Delhi in 1804. His reputation



Sir D. Ochterlony,
British soldier
After Davis

during the war with the Gurkhas, and it was largely due to him that the ruler of Nepal was forced

to terms. He served also in the war against the Pindaris. As resident at Rajputana, his action in 1825 led to a rupture with the governor-general, Lord Amherst, and he resigned. He died almost at once at Meerut, July 15, 1825, having been made a baronet in 1816.

Ockham or **OCCAM, WILLIAM OF** (d. 1349). English Franciscan monk and schoolman, known as the Invincible Doctor. He was born at Ockham, in Surrey, and died at Munich. His defence of Nominalism against Realism gained him the name of Prince of Nominalists. One of his chief merits is that he restored induction to its proper place as the handmaid of deduction.

O'Connell, DANIEL CHARLES (c. 1745-1833). Irish soldier. Born of good family in co. Kerry, he entered the French army in 1770. With the Irish brigade he served in the Seven Years' War, in Mauritius, and at the siege of Gibraltar, winning the title of count and the rank of colbnel. In 1792 he took



Ochrida, Serbia. Monastery of S. John overlooking the lake

the side of the Bourbons, and, having sought refuge in London, he proposed to form an Irish brigade to serve against the republic. The scheme, however, failed. He returned to France after the peace of Amiens in 1802, and lived there until his death, July 9, 1833. The Liberator was his nephew.

O'Connell, DANIEL (1775-1847). Irish leader, known as the Liberator. Born near Cahirciveen, co. Kerry, Aug. 6, 1775, he was educated at the English Colleges at St. Omer and Douai, studied at Lincoln's Inn, 1794-96, and was called to the Irish bar, 1798. Starting in 1803 on his long struggle for Catholic emancipation, by 1808 he had become the virtual leader of the movement in Ireland. In 1815 he killed in duel a Dublin tradesman named D'Esterre, and in 1820 a duel with Sir Robert Peel, arranged to take place in Ostend, was prevented by O'Connell's arrest and his being bound over in London.



Daniel O'Connell

After T. Carriac

In 1823 O'Connell founded the Catholic Association (q.v.), and in 1826 the Order of Liberators, which was to prevent secret societies, feuds, and riots, protect the rights of franchise holders, and generally unite Irishmen of all classes for the common good.

His election as M.P. for co. Clare, 1828, and his refusal to take the oath, had their influence in the passage of the Catholic Relief Bill, 1829, and, re-elected unopposed, he took his seat in Feb., 1830. Before long he started his struggle for the repeal of the legislative union, and came to a working arrangement with the Whigs in 1835. The Repeal Association was founded in 1840, the powerful Nation newspaper in 1842, and in 1843 came O'Connell's famous monster meetings all over Ireland. A great gathering fixed for Clontarf was proclaimed, and O'Connell was arrested and tried for sedition. - He was fined £2,000, and sentenced to one year's imprisonment, but the sentence was reversed by the House of Lords, 1844. He supported Lord John Russell's ministry, 1846; but ill-health and increasing party dissensions in Ireland clouded his genius. He died at Genoa, May 15, 1847. See Catholic Emancipation; Ireland; Ireland: History; consult also Daniel O'Connell, R. Dunlop, 1900; Leaders of Public Opinion in Ireland, W. E. H. Lecky, vol. ii, 1903.

O'Connor, FEARGUS EDWARD (1794-1855). Irish agitator and Chartist. The son of Roger O'Connor, one of the United Irishmen, he was born July 18, 1794, educated at Trinity College, Dublin, and entered Parliament in 1832 as M.P. for co. Cork. In 1835 he was unseated on petition, and

transferred his activities to England, where he became leader of the Chartist movement, advocating extreme measures in his speeches, and in a paper, *The Northern Star*, which he established at Leeds. O'Connor advocated physical force, and in 1846 was imprisoned for seditious libel. In 1847 he was elected M.P. for Nottingham, and in 1848 he presided over the great Chartist demonstration at Kennington. Found to be insane in 1852, he died in London, Aug. 30, 1855. See Chartistism.



Feargus O'Connor,
Irish agitator

O'Connor, THOMAS POWER (b. 1848). Irish journalist and politician. Born at Athlone, Ireland,



T. P. O'Connor
Russell

Oct. 5, 1848, and educated at Athlone and Queen's College, Galway, he became a reporter on Saunders's Newsletter, Dublin, in 1867. He joined the staff of *The Daily Telegraph* in 1870, and founded and edited *The Star*, *The Sun*, *The Weekly Sun*, M.A.P., T.P.'s Weekly, and other journals, in which he did much to popularise literary study. A fluent and picturesque writer and a ready and witty speaker, he wrote a biography of Lord Beaconsfield, and books on *The Parnell Movement* and *Gladstone's House of Commons*.

Nationalist M.P. for Galway in 1880, he was returned for the Scotland div. of Liverpool in 1885, and was still representing that constituency in 1925. President of the United Irish League of Great Britain since 1896, he became chairman of the censorship board of British film makers, 1917. He was made a privy councillor, 1924.

Oconto. City of Wisconsin, U.S.A., the co. seat of Oconto co. It stands on Green Bay at the mouth of the Oconto river, 143 m. N. of Milwaukee, and is served by the Chicago, Milwaukee and St. Paul, and the Chicago and North-Western rlys. Oconto was incorporated in 1882. Pop. 4,900.

Octans. Constellation which surrounds the Southern Pole. It is of considerable extent, but its stars are faint. The Southern Pole star, Sigma Octantis, is between fifth and sixth magnitude. See Constellation.

Octave (Lat. *octavus*, eighth). Word used in several senses. (1) In music, an interval of 8 scale steps, and the second note of the harmonic series. It is a perfect consonance, and the upper note of an octave bears the same alphabetical name as the lower note. An organ stop of 4-ft. pitch on the manuals and of 8-ft. pitch on the pedals is called an octave. (2) In literature, the first two quatrains of the sonnet, written on the same pair of rhymes, are termed the octave, and the word is applied less technically to any stanza of eight lines. (3) In ecclesiastical terminology, an octave is the eighth day after a festival, the feast day itself being reckoned as the first. See Organ.

Octave Flute. Small flute sounding an octave higher than the ordinary flute. See Piccolo.

Octavia (d. 11 B.C.). Sister of Octavian, afterwards the Roman emperor Augustus, and wife, first of C. Marcellus, by whom she was the mother of Marcus Marcellus (q.v.), and secondly of Antony, the triumvir. The desertion of Octavia by Antony for Cleopatra was an important factor in causing the war between Octavian and Antony.

Octavo (Lat. *octo*, eight). Term used in connexion with the size of books. An octavo or 8vo. volume is one in which the sheets have been cut into eight. The size of a page is usually about 5 ins. by 9½ ins., but royal octavo is somewhat larger. See Book.

Octet (Lat. *octo*, eight). Musical composition for eight performers. The term is sometimes applied to a double quartet, but belongs properly to a work in which the eight instruments are treated independently. Schubert wrote a famous one for clarinet, horn, and bassoon, with two violins, viola, violoncello, and double bass. Gade, Svendsen, and Mendelssohn wrote octets for strings alone, and Beethoven left one, called *Grand Octuor* (Op. 103), for two hautboys, two clarinets, two horns, and two bassoons.

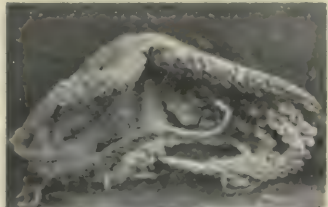
October (Lat. *octo*, eight). Eighth month of the old Roman and tenth of the Christian calendar. For short periods it was given different names in honour of Roman emperors, e.g. Domitianus, in honour of Domitian; and Invictus (unconquered), in allusion to the athletic prowess of Commodus. It was also called temporarily Faustinus, in honour of Faustina, wife of the emperor Antoninus Pius. The Anglo-Saxons called October Winter-fylleth (winter full moon), from the supposed beginning of winter with the October full moon. See Calendar.

Octobrist Party. Russian political party. Officially called the Union of October 17, because it supported the principles contained in the tsar's manifesto of Oct. 17 (O.S.), 1905, promising a constitution and guarantees of liberty, the party originated at the Moscow conference in Nov., 1905. A small party originally, it supported Witte's policy. In the third Duma the Octobrists were the largest party. They supported the government's repressive policy during the Great War, and in 1916 formed part of the central bloc. See Duma Russia; Witte, Count.

Octodon. Generic name of a rodent mammal known as the degu. In form it is like a common rat, is about 8 ins. in length, and has yellowish-brown fur, mottled with black, on the upper parts, and yellowish below. It occurs in Chile and Peru. The family Octodontidae includes about 27 genera.

Octopus (Gr. and Lat. *octo*, eight; *pous*, foot). Genus of cephalopodous (head-footed) molluscs. There are numerous species, the common octopus (*O. vulgaris*) occurring round the S. British coasts. It has a rounded bag-like body, with a large head bearing eight long "arms" or tentacles thickly studded with suckers. It is greyish brown in colour, with numerous tubercles on the skin, and it can alter its hue considerably to suit its surroundings. When irritated, it becomes dark, and large tubercles rise on the skin. The mouth is provided with a horny beak resembling that of a parrot. The round eyes are prominent and staring.

The octopus lurks in holes in the rocks and crawls on the sea bottom in search of the crustaceans and bivalves on which it chiefly feeds; but



Octopus vulgaris creeping forward; top, turned on its side, showing tentacles studded with suckers

it can swim backwards by forcibly expelling water from its siphon. The female produces about 50,000 eggs in the season. These resemble grains of rice, and are attached in stalked clusters to rocks and stones. On the Mediterranean shores and in the Channel Islands the octopus is dried and used for food. *See* Animal, colour plate; Cephalopoda.

Octroi (Fr. *octroyer*, to grant). French name for a local tax, one in the nature of an import duty. Roman in origin, the custom took root in France, but its modern use dates from the 12th century. Many cities and towns obtained from the king the right to levy octroi duties and retained it until the Revolution. They were paid on goods sold in their markets or entering their town. A percentage of the duties was usually paid to the national treasury, and they were let out to farmers. The octroi was abolished in 1791, but restored in 1798 to Paris, and later to other cities, under conditions which have been several times revised. The system obtains in some places in Italy and Spain. It was abolished in Belgium in 1860, and in Great Britain never found favour, though the coal and wine dues which were levied at one time on goods entering the port of London were of the nature of octroi. *See* Customs; Taxation.

Odde. Village and tourist resort of Norway. It stands at the S. end of the Sör Fiord, an arm of the Hardanger Fiord, and is the terminus of the routes from Telemarken and Stavanger Fiord. ◀

Oddfellows, ORDER OF. Fraternal benevolent society. Founded early in the 18th century, when it was mentioned by Defoe, the earliest known lodge was existing in London in 1745. Members were assisted in sickness or poverty from lodge funds. In the latter half of the century the order was proscribed as seditious, but in 1813 a great revival took place at Manchester, where the Independent Order of Oddfellows, Manchester Unity, was founded. This speedily absorbed most of the minor lodges in Great Britain, and in 1819 spread to the U.S.A. Daughter organizations have been established in most civilized countries. *See* Friendly Societies.

Ode (Gr. chant). In its literal sense, any poem written to be sung to musical accompaniment. The Greek ode developed along two wholly different lines. As the subjective expression of personal emotion it was moulded by Alcaeus, Anacreon, and Sappho into the lyrical stanzas still known by their names, adapted with exquisite perfection to the genius of

the Latin language by Catullus and Horace, and reproduced in an infinite variety of graceful shapes by lyricists of every cultured race. As the ritual hymn solemnly chanted by the chorus at festivals primarily religious in intention, the ode was developed by Stesichorus, Simonides, and Bacchylides, and brought to its finest perfection of structure and fiery splendour by Pindar.

It is to the stately choric composition that the word ode is now more generally applied. But while many poets, impressed by the majesty and the concurrent exuberance of the Pindaric ode, have sought to capture its spirit and acclimatise it in their own country, few have had the perception and the learning necessary to analyse its composition and master the intricate detail of its technical structure. The earliest Stesichorean ode, with its division into strophe, antistrophe, and epode, has been reproduced with considerable success by several poets, Congreve, Gray, and Matthew Arnold among them. The true Pindaric ode still remains a thing apart, unmatched. Meanwhile, though his odes were not Pindaric at all, Cowley by his Pindaric Odes was instrumental in the creation of a literary form, now generally called the irregular ode, very suitable to the English genius, and put to triumphant use by Milton, Dryden, Wordsworth, Tennyson, and by Francis Thompson in *The Hound of Heaven*. *See* Pindar; Poetry; consult also English Odes, E. W. Gosse, 1881.

Odenathus.

Prince of Palmyra, and husband of the more famous Zenobia. After the defeat of the army of the Roman emperor Valerian by the Persians, he organized a successful resistance, and in a series of campaigns from 262 to 264 restored Mesopotamia to Rome, and carried his arms as far as Ctesiphon. For these services he was rewarded by Valerian's successor Gallienus with the title of Imperator, but was shortly afterwards assassinated. His widow, Zenobia, reigned as queen after his death.

Ödenburg. Town of Hungary. It was formerly the chief town in W. Hungary, being in the area where the bulk of the people are Germans; the official Magyar name was then Sopron. It lies W.

of the Ferto, and is a rly. junction for Vienna, 51 m. by rly. to the N.W. The chief buildings are the Dominican church of the 17th century, the Benedictine church of the 13th century, the town hall, which houses a museum, and the town tower, 200 ft. high. The site has been identified as that of the Roman Sopronium. Pop. 33,900.

Odenkirchen. Town of Prussia, in the Rhine prov. It is on the Niers and the Gladbach-Stolberg rly., 21 m. S.W. of Düsseldorf. It has a seminary for teachers, an agricultural school, and weaving and spinning factories. Pop. 21,000.

Odense (*Odins-ø*, i.e. Odin's Island). City of Denmark, capital of Fünen, and third largest city in the kingdom. Situated near the mouth of the river Odense, and connected with Odense Fiord by a ship canal, it has a good harbour, a castle, museum, technical schools, seminary, and a park. The cathedral of S. Knud, founded 1086, is one of the finest Gothic edifices in Denmark; the church of Our Lady dates from the 12th century. A fine town, with a modern town hall, it is lighted by electricity. Cloth, glass, chemicals, and tobacco are manufactured, and grain, eggs, butter, bacon and other dairy produce, and hides exported. Odense was the meeting-place of several diets and councils, and the birthplace of Hans Andersen, whose house has been converted



Odense, Denmark. House where Hans Christian Andersen was born

into a museum. Pop. 45,300. *See* Andersen, H. C.

Odenwald. Wooded mt. region in Hesse-Darmstadt, Germany. It stretches between the Neckar and the Main. Composed of basalt, gneiss, granite, and syenite, the mts. have many valleys and ravines. The highest peak, the Katzenbuckel, is 2,057 ft. in alt. and has an observation tower. Odenwald is a populous region and there are castles and hamlets in the valleys. The Bergstrasse on the W. Odenwald is rich in legend and is mentioned in the *Nibelungenlied* (q.v.).



Odessa. Plan of the central districts of the South Russian city, with the harbour

Oder. River of Germany. It rises near Kozlau in Moravia, Czechoslovakia, and flows through Silesia and Prussia to the Baltic Sea at the Stettiner Haff. In Silesia it occupies a valley between the Bohemian and Polish plateaux. It has been canalised to a depth of at least 5 ft. for 480 m. from the mouth of Swinemünde to Ratibor, although boats of 400 tons stop at Kosel, the river port for the mining region of Upper Silesia. The chief tributary is the Warta (Warthe), which with its affluent the Netze drains the W. plains of Poland. There are canal connexions to the Elbe and Vistula. Length, 550 m.

Odessa. City and seaport of Russia, the chief business centre in the south of the country. It is in the govt. of Kherson, 25 m. N. of the mouth of the Dniester 90 m. S.W. of Kherson, and is the terminus of the south-western rly. It contains a large



Odessa arms cathedral, university, and observatory.

Odessa (the Roman *Istriarum portus*) was founded by Catherine II in 1795 on the shores of the Black Sea, in order to provide the country with one ice-free winter port. Cut off from communication with the Allies when Turkey closed the Dardanelles, in 1914, Odessa was bombarded by the Turkish fleet on several occasions. It was occupied from the land side by the Germans on

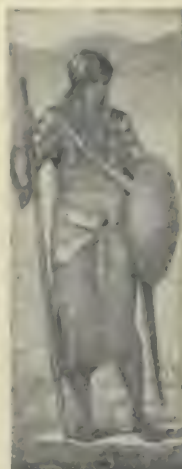
March 12, 1918, and was taken by the Bolsheviks in 1920. Soviet Russia made it an open port. See Russia.

Odeum. Latin form of the Greek *Odeion*, name for a building devoted to musical performances. Such buildings used to be found in many Greek cities, but the most famous were the odeum of Pericles S.E. of the Acropolis at Athens, and that built by Herodes Atticus at the foot of the Acropolis in Athens about A.D. 160. The

Athenian odeum accommodated about 8,000 people, and its ruins still stand.

Odin. In Norse mythology, the greatest of the gods. He is the Anglo-Saxon Woden and German Wodan, and his name, cognate with Lat. *vates*, a seer, probably means frenzied. Creator of the world and of mankind, he is called All-father.

Contrasted with the rough peasants' god Thor, he was worshipped specially by the noble families, many of



Odin, the greatest of the northern gods
From a painting by Burne-Jones

whom claimed descent from him, and was a patron of culture, inventor of runes, and god of wisdom, poetry, magic, and prophecy. His two ravens brought him news of daily events. In various forms, but chiefly as a one-eyed old man wrapt in a mantle, he wandered through the earth. As a war god Odin was lord of the Valkyries, and those

who fell in battle, regarded as sacrificed to him, were received by him into Valhalla. See Mimir; Valkyrie; Wednesday; Mythology; Ymir.

Odoacer, ODOVAKAR OR OTTO-KAR (c. 435-493). German soldier. A prince of one of the tribes on the Danube, he entered the Roman army and became one of the imperial body-guard. Putting himself at the head of a revolt of German mercenaries, he compelled the emperor Romulus Augustulus to abdicate, was raised to the rank of patrician by Zeno, emperor of



Odessa, Russia. Harbour for foreign vessels, known as the Quarantine Harbour. Top, Richelieu stairs, descending from the fashionable Nicholas Boulevard to the harbour

the East, and became ruler of the West, nominally as a representative of Zeno, but in reality independent. Zeno, jealous of his success, persuaded Theodoric the Ostrogoth to attack him. Defeated on the Isonzium (Isonzo), 489, and at Verona, 490, Odoacer was besieged in Ravenna for three years, when he was forced to capitulate. Theodoric at first treated Odoacer well and accepted him as joint ruler, but on the pretext that he was scheming to regain possession of the whole of Italy, treacherously slew him, March 5, 493.

O'Donnell, FRANK HUGH MACDONALD (1848-1916). Irish nationalist. Educated at Queen's University, Galway, he was elected Home Rule M.P. for Galway in 1874. He was an active partisan of Parnell, but, disagreeing with the Land League, he severed his connexion with the party, and in 1885 retired from Irish politics. He was largely responsible for the legislation which abolished flogging in the army, 1879. One of the founders of the National Democratic League in 1899, he was president of it, 1904-6. O'Donnell was a consistent advocate of self-government for India, and favoured the inclusion of Indian members in the imperial Parliament. He died Nov. 5, 1916.

Odontoglossum. Large genus of orchids of the natural order Orchidaceae, natives of tropical America. They have pseudo-bulbs and sword-shaped, more or less leathery leaves. The large, showy flowers are in handsome sprays. They are distinguished by the column being long and narrow, and by the base of the lip being parallel with the face of the column. *See* Orchid, colour plate; Orchis.

Odontolite. Fossilised ivory, the teeth of the mastodon and other extinct species, tinged blue by impregnation with phosphate of iron, or green by copper. It is known as bone turquoise or accidental turquoise, and when cut *en cabochon* much resembles the true gem; but it is softer, appears dull grey by candle-light, and bleaches in alcohol.

Odontology (Gr. *odous*, tooth; *logos*, science). Science relating to the teeth. *See* Dentistry; Teeth.

Odontornithes. Name given to a fossil toothed bird. Though living birds have no teeth, there are embryonic evidences of their descent from toothed birds, the odontornithes. Fossil remains of the latter, which include the archæopteryx and ichthyornis, are found in Cretaceous and Jurassic beds. The teeth of these fossil birds closely resemble those of present-day reptiles.

Odysseus. Greek form of the name of the hero called in Latin Ulixes and later Ulysses. In Greek legend, he was king of Ithaca, one of the leading heroes on the Greek side in the Trojan war, and the type of a resourceful and versatile leader. Many tales were told of his artful devices. During the war Odysseus distinguished himself not only by his prowess in the field, but by his wisdom.

His wanderings after the fall of Troy are the theme of the *Odyssey*. Having reached Ithaca, he found that during his absence his wife Penelopë had been plagued by about 100 suitors for her hand, who had quartered themselves in the royal palace. Disguised as a beggar, and making himself known only to his son Telemachus and a trusty swineherd, Eumæus, he made his way to the palace, and was discovered by an old nurse. Penelopë, apprised of the return of her husband, agreed to give her hand to the suitor who should be able to bend the great bow of Odysseus. He alone succeeded, and then turned its arrows upon the suitors, whom he slew with the help of Athena and Telemachus. Odysseus was unwittingly slain by Telegonus, his son by the enchantress Circe. *See* Homer.

Odyssey. Greek epic poem in 24 books dealing with the 10 years' wanderings of Odysseus on his way home after the fall of Troy. After relating Odysseus' many surprising adventures, such as those with the lotus-eaters, the Cyclops, the enchantress Circe, the shades of the dead, the Sirens, the nymph Calypso, the Phæacians, and other strange happenings, the poem ends with his return to his native Ithaca. Whatever may be the secret of its authorship, the

Odyssey is a rich storehouse of ancient folklore and romance, and one of the world's masterpieces of literature. There are verse translations by Pope and others, and a prose translation by S. H. Butcher and A. Lang. *See* Homer.

Oecumenical. Term of Greek origin, meaning "of the whole world." It is applied to a Church council to which bishops from all countries have been summoned, or whose decisions have been accepted by the universal Church. *See* Council.

Oedema (Gr., a swelling). Effusion of fluid into the tissues of the body. *See* Dropsy.

Oedipus (Gr., swollen foot). In Greek legend, son of Laius, king of Thebes, and Jocasta. An oracle having declared that Laius would perish at the hands of a son born of Jocasta, Oedipus, at birth, was exposed on the mountains with his feet pierced. There he was found by shepherds, by whom he was taken to Polybus, king of Corinth, who brought up Oedipus as his own son. The Delphic oracle declared that he would slay his father. Oedipus happened to meet Laius, and in a sudden brawl killed him without suspecting his identity.

At this time the Sphinx (*q.v.*) was plaguing Thebes by devouring everyone who failed to answer a riddle. The Thebans proclaimed that the kingdom and the hand of Jocasta would be the reward of the man who rid the country of the monster. Oedipus essayed the adventure, and when the Sphinx propounded the riddle: What is the being which has four feet, two feet, and three feet; but its feet vary, and when it has most feet it is weakest? Oedipus answered that it was man. Enraged at receiving the correct answer, the monster threw herself from the rock. Oedipus thus became king of Thebes, and unwittingly married his own mother, by whom he had children. A plague then ravaged the land, and an oracle having declared that the plague would continue until the slayer of Laius was found, Oedipus set himself to discover the murderer, and learnt the truth from the prophet Tiresias. Jocasta hanged herself, and Oedipus put out his own eyes. The story is handled in the two great plays by Sophocles. Among modern dramatists, Corneille, Dryden, and Voltaire have treated the subject. *See* Antigone; Sophocles.

Oedipus Coloneus (*Oedipus at Colonus*). Tragedy by Sophocles. It takes its name from the grove of the Eumenides at Colonus, near Athens, whither the blind and weary Oedipus is led by his



Odontornithes. Reconstruction of skeleton of Ichthyornis victor, one-quarter actual size

daughter Antigone, there to find relief from his bodily and mental sufferings in death. One of the most beautiful of the choric passages contains a glorification of the poet's home. The date of the play is unknown.

Oedipus Tyrannus (King Oedipus). Tragedy by Sophocles, produced 430 or 429 B.C. Although generally regarded as the greatest of his plays, it failed to obtain the prize at the Dionysia. The story contains one of the most striking examples of what is known as "tragic irony." The play is one of the few ancient tragedies that could be successfully produced before a modern audience in spite of the somewhat repellent plot. See *Oedipus*.

Oehlenschläger, ADAM GOTTLÖB (1779-1850). Danish poet. He was born Nov. 14, 1779, at Vesterbro, Copenhagen, the son of a musician, who became steward of the royal palace of Frederiksborg. After four years of school life in Copenhagen and a year's private study, he was for a time an actor, but literature absorbed him, and he fell under the influence of Goethe and other German thinkers.

In 1803 he published his first volume of poems, which included the play entitled *The Eve of St. John*. All kinds of poetical works followed in quick succession, that which won for him the most fame being his drama *Aladdin*. In 1805 the Danish government allowed him a pension which enabled him to spend some years in Halle, Berlin, Weimar, Dresden, Paris, and Switzerland. In Halle he wrote two of his best known historical dramas, *Hakon Jarl* and *Palnatoke*. In 1810 he was appointed professor of aesthetics at the university of Copenhagen. His lyrics, epics, sagas, and dramatic work are remarkable for masculine vigour, wealth of invention, and width of range. He died Jan. 20, 1850. See *Works*, with biography, 15 vols., 1897-1900.

Oelsnitz. Town of Germany, in Saxony. Situated on the right bank of the White Elster, at 1,330 ft. alt., 26 m. S.W. of Zwickau, its buildings include the ancient Jakobskirche and the rathaus. It has carpet factories, breweries, and brick works, and corsets, furniture, yarn, and wool are manufactured. Pearl fishing is carried on in the

summer in the Elster and its tributaries. The town was founded in the 6th century. In 1859 it was almost burned to the ground and afterwards rebuilt. Pop. 14,000.

Oenanthic Ether. Oily liquid with a vinous odour, consisting of various ethers, such as ethyl caprate and pelargonate. It is prepared by the distillation of wine-lees, and is used for flavouring artificial brandy, and, when mixed with Peru balsam and cassia and lavender oils, for perfuming soap. Oenanthic ether is also known as oil of cognac.

Oenolin. Natural colouring matter of wine. In analysing wine, it is necessary to distinguish between artificial colours and the red colour due to oenolin. The chemical tests are numerous. Dupré's gelatin test consists in pouring wine into a soup-plate into which a cube of gelatin has been placed.

Oenone. In Greek legend, a nymph of Mt. Ida, and wife of Paris, who deserted her for Helen. Her story is the subject of a poem by Tennyson. See *Paris*.

Oersted, HANS CHRISTIAN (1777-1851). Danish physicist. Born at Rudkjöbing, Langeland, and educated at Copenhagen, he won a travelling scholarship and visited Hol-

land and Germany, and Paris. In 1819 he made the discovery, on which his fame rests, that a magnetic needle was deflected by a current in a wire passing below or over it, the initial discovery in electromagnetism. For the discovery he was awarded the Copley medal of the Royal Society. He wrote many popular scientific works in physics and chemistry, and showed the connexion between chemical and electrical forces. See *Ampère*.

Oesel, ÖSEL, EZEL, OR SÄRRE MAA. Island of Esthonia. Situated at the entrance to the Gulf of Riga, the island has an irregular coastline and a low, level surface. Farming, horse-rearing, and fishing are the principal occupations of the inhabitants, most of whom are Esthonians. Arensburg is the chief town. Area, 1,010 sq. m. Pop. 45,000.

Oesophagus or GULLET. Muscular tube, lined internally with mucous membrane, which leads from the pharynx or posterior part of the mouth to the stomach. About nine inches in length, it passes down behind the trachea

and in front of the spinal vertebrae. In the chest it lies behind the left bronchus and the pericardium.

Obstruction of the oesophagus may result from swallowing a foreign body, such as a fish bone, coin, false teeth, etc. The obstruction can sometimes be withdrawn by a suitable oesophageal forceps, but when firmly impacted there is serious risk of injury to the walls of the oesophagus in the process of extraction, and the case should be promptly referred to a surgeon.

Offa (d. 796). King of Mercia. A member of the royal house, he obtained the crown by crushing a rival in 757. Mercia was then in a shrunken and distressed condition, but Offa restored its fortunes, victorious battles bringing Kent, Essex, and probably Sussex and other regions under his rule, and driving the Welsh farther into their own land. He was virtually overlord of all England except Northumbria, and created a third English archbishopric, that of Lichfield. After Offa's death Mercia's premier position quickly disappeared.

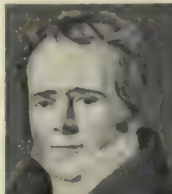
Offal. Word, literally off-fall, meaning refuse or waste. It is used for feeding stuffs for animals, these consisting of husks, etc., which are stripped from grain. It is also used for those parts of the bull, sheep, or pig which are not eaten as food by human beings. In the Great War, however, an extended use was given to the word, and it included those parts of the animal which were eaten, but were not rationed, for instance, liver. See *Food Control*.

Offa's Dyke. Ancient entrenchment built by Offa, king of Mercia, about 779, to form a barrier between England and Wales. It extended from the mouth of the Dee to the Wye, close to its confluence with the Severn, and passed through the counties of Flint, Denbigh, Montgomery, Shropshire, Radnor, Hereford, and Gloucester. It was preceded by Watt's dyke, some little distance to the E., and both probably utilised prehistoric entrenchments. It consisted of an earthen rampart and a ditch.

Offenbach. Town of Hesse, Germany. It stands on the Main, 3 m. from Frankfurt, with which it is connected by rly., one line being an electric one. The chief buildings are the castle, once the residence of the counts of Isenburg, several churches, and a synagogue. The town has manufactures of leather goods, etc. In the 17th and 18th centuries French refugees made it a manufacturing town. Offenbach existed as a village through the later Middle Ages, being on the lands of the counts of Isenburg. About



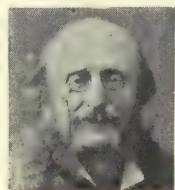
A. Oehlenschläger.
Danish poet



Hans C. Oersted,
Danish physicist

1685 the count made it his residence, and it remained under the family until the Napoleonic Wars. In 1816 it became part of Hesse. Pop. 76,000.

Offenbach, JACQUES (1819-80). French composer. Of Jewish family, he was born at Cologne,



June 21, 1819. His musical gifts led him to become a student in Paris, and after some preliminary experience he was made con-

Wm. M. Osherson

ductor at the Théâtre Français. Soon he began to compose, and in 1853 his *Pepito* was produced. His great successes were made in operettas of the type known as *opera bouffe*. He produced many of them at his own theatre, the Théâtre Comte; in all he wrote over 70, the best known including *La Grande Duchesse de Gêrolstein*, *Madame Favart*, and *Geneviève de Brabant*. Offenbach died Oct. 5, 1880.

Offenburg. Town of Baden, Germany. It stands on the right bank of the Kinzig, 10 m. S.E. of Strasbourg. It has a Gothic church, and a monument to Sir Francis Drake, supposed to have been erected in honour of his having introduced the potato into Europe. The castle, destroyed by the French in 1689, was rebuilt in 1834 by a Russian nobleman. There are manufactures of cotton, tobacco, cigars, machines, brushes, stained glass, dyes, and a trade in wine. Offenburg became a corporate town in 1223. Pop. 17,000.

Offence. In law, generally, the widest term used to describe breaches both of the criminal law and of regulations made for the public good, e.g. Public Health Acts. In England it is also used in a narrower sense, to describe an act which is not an indictable crime or misdemeanour, but is nevertheless punishable by fine, imprisonment, or other penalty, e.g. adulteration of food and drugs, selling short weight or measure, and breaches of town by-laws.

Offertory. Ecclesiastical term for that part of the Holy Communion service, in which the alms and oblations of the congregation are offered, and oblation of the bread and wine is made at the altar by the officiating priest. It is also applied to the sentences read by the

priest while the alms are being collected. In the Anglican Church these sentences have taken the place of the antiphon or anthem, called the offertory, which used to be said or sung while the people made their oblations. In early times the offerings included the bread and wine, as well as things needful for the maintenance of divine worship. The word offertory is loosely applied to all church collections.

Office (Lat. *officium*). Literally, a service or duty. It is thus used in ecclesiastical language, e.g. the offices or services of the Church. The Holy Office of the Inquisition is a similar use. In secular matters it means a position, especially one carrying responsibility, instances being the terms, office holders and office seekers. If a member of Parliament accepts an office of profit under the crown he must resign his seat. Office also means the place where business is done. The management of an office, with the object of securing the maximum of efficiency, is a subject to which much attention has been paid in the U.S.A. and Great Britain in the 20th century. It includes the use of files, card indexes, and other labour-saving devices.

Officer. A person serving in the army, the marines, navy, or air force on the terms of a commission (*q.v.*) granted by the sovereign. In a legal sense a military man is either an officer or a soldier, and the latter term embraces warrant officers (*q.v.*) and non-commissioned officers (*q.v.*). The symbol of commissioned rank is a sword, of which an officer is deprived when placed in arrest. On active service, for purposes of discipline certain civilians who are permitted to accompany the army are graded so as to receive the treatment of officers, e.g. a newspaper correspondent would be dealt with in all respects as an officer, if holding a pass from the army commander—otherwise as a soldier. An officer who resigns his commission becomes again, in a legal sense, a civilian, but it is customary to address him as belonging to the rank he held on leaving the army.

In peace time, an officer usually wears plain clothes (called *muffs*) when out of his quarters and off duty. He receives his pay monthly in advance through an army agent (*q.v.*), buys his own uniform, and is privileged to keep a soldier servant. He must, if unmarried, live in quarters (*q.v.*) and dine in mess (*q.v.*). In the cavalry and artillery, and in the infantry, if his duties require him to ride, an officer is

now provided with a horse, a groom, and forage. His pay is supplemented by various allowances, and by serving the required number of years he is entitled to retired pay or gratuity. In the Indian army retired pay is called pension. An officer must retire at a fixed age according to rank, but he may be permitted to retire at any time after a certain period of service, on a pension, the latter varying according to the term of service. See Captain; General; Lieutenant; Major, etc.

Officer's Friend. Name given to an officer who represents an accused brother officer at a court-martial. See Court Martial; Prisoner's Friend.

Officers' Training Corps. In Great Britain, an organization of the Territorial Force attached to universities and schools. In these corps cadets are trained for commissions in the Special Reserve. They are required to pass two examinations before being granted commissions. The officers are generally members of the staff of the university or school who hold commissions in the Territorial Force. The instruction includes practical work and lectures on military subjects.

To supply the greatly increased requirements in officers during the Great War, special training corps were organized in 1916, in which suitable men from the ranks, selected by their commanding officers, were trained for commissions.

Official Receiver. Public official who manages the affairs of bankrupts, taking over their property, realizing the assets, and distributing the money to the creditors. England and Wales are divided into bankruptcy districts, each with a receiver appointed by the board of trade, while others are attached to the bankruptcy department of the high court of justice in London. A trustee appointed for a bankrupt's estate is under the supervision of the receiver. Official receivers perform similar duties in cases where public companies become bankrupt. They were first appointed under the Bankruptcy Act of 1883. See Bankruptcy.

Official Referee. Official of the English high court of justice. He is one of three subordinate judges, whose business it is to try cases, or hold inquiries involving long investigations into accounts, etc. They usually sit in London, but an official referee may hold inquiries elsewhere, if that is the more convenient course. An appeal lies from an official referee to a divisional court of the high court.

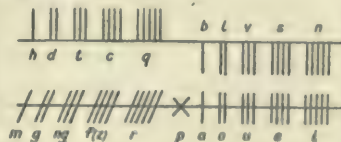
Official Secrets Act. British law passed in 1889. It makes it an offence for any public official to communicate any information of an official character. If he communicates it to an agent of a foreign country it is a felony. Otherwise it is a misdemeanour.

Offset. In printing, a method of transferring an image or design from the surface upon which it is impressed to a rubber cylinder, this becoming the printing surface, which in turn transfers the image to the paper. An offset resembles a set-off, which occurs when a sheet of paper fails to pass into a printing machine and the impression cylinder receives the image instead of the paper, and the back of the next sheet, passing through, then receives the image from the cylinder. The difference is that offset becomes the actual mode of printing, instead of the accidental set-off, and is carried out by the introduction of an intermediary or third cylinder.

Decorations on tin boxes are produced in this way, and the tinplate printing process was the pioneer of the modern use of offset printing which is specially adaptable for rough papers. The unglazed side of the coloured diagram facing page 4916 of *Harmsworth's Universal Encyclopedia* was thus produced. Owing to the hardness of the paper, treasury notes and other paper script are so printed. See *Colour-Printing*; *Intaglio*; *Lithography*; *Photo-Lithography*; *Printing*; *Process*.

Offerdingen, HEINRICH VON (c. 1170-1250). German minnesinger. Some writers have suggested that Offerdingen was the author of the *Nibelungenlied* (*q.v.*).

Ogam OR **OGHAM.** System of writing employed in early Britain and Ireland. The name is connected with Ogmios, the Gaulish god of eloquence. The alphabet comprised 21 characters, composed of straight incised lines or notches on one side of or across a stem line. In stone inscriptions this was usually one of the upright edges, the characters being read upwards:



Perhaps invented at the end of the Roman occupation—one of the oldest examples having come from Silchester—ogam-writing continued in use until the 10th century. Of the 300 examples known,

about 30 are from R. Scotland, Orkney, Shetland, and Man, and an equal number, mostly with Latin legends as well, from Wales, Devon, and Cornwall. The remainder were found in Ireland. Mostly stone epitaphs, sometimes associated with Christian symbols, a few occur on metal ornaments. The key to their decipherment was furnished by the 14th century MS Book of Ballymote. See *Epigraphy*; *Inscriptions*; *Ireland*; consult also *The Ogam Inscribed Monument of the Gaedhil in the British Islands*, R. R. Brash, 1879; *Studies in Irish Epigraphy*, R. A. S. Macalister, 1897-1907.

Ogden. City of Utah, U.S.A., the co. seat of Weber co. It stands 4,338 ft. in alt. at the junction of the Ogden and Weber rivers, 38 m. N. of Salt Lake City, and is served by the Union Pacific and other rlys. Ogden dates from 1848, and became a city in 1851. Pop. 32,800.

Ogdensburg. City of New York, U.S.A., in St. Lawrence co. A port of entry, it stands on the St. Lawrence river, at its junction with the Oswegatchie, opposite Prescott, Ontario. Its buildings include the U.S. government building, the R.C. cathedral, and the state hospital and armoury. A large lake shipping trade is carried on. Settled in 1749, Ogdensburg was incorporated in 1817 and became a city in 1868. Pop. 14,600.

Ogier the Dane. Hero of medieval romance, belonging to the Charlemagne cycle. Historically he represents the Frank Atchar, who conducted the widow of Charlemagne's brother, Charlotman, to Desiderius, king of the Lombards, and joined him in his war against Charlemagne. His connexion with Denmark seems due to a mistake, though as Holger Danske he was adopted as a Danish national hero. Ogier is the subject of French and Italian romances, and of Spanish and Scandinavian tales.

Ogive, OGOWE, OGOWAY, OGOWAL, OR OGODO. River of French Equatorial Africa. It falls into the sea a few miles S. of Cape Lopez, and forms the principal coastal river between the Niger and the Congo. It is obstructed by numerous rapids, but is navigable as far as Njole, 160 m. from its mouth. Its length is 700 m.

Oglethorpe, JAMES EDWARD (1696-1785). English soldier and philanthropist. Born Dec. 21, 1696, he served under Prince Eugene, and entered parliament in 1722. His attention having been drawn to the sufferings of debtor prisoners, he formed an association for the establishment of a colony

of released debtors, and in 1733 he settled Georgia, acting as governor there for 13 years. In 1745



James E. Oglethorpe, English soldier

he was sent against the Scottish rebels, but was court-martialled on a charge of Jacobite sympathies, and though acquitted he resigned his commission. He died July 1,

1785. See *Georgia*; consult also *Memoir of General J. Oglethorpe*, R. Wright, 1867; *A Paladin of Philanthropy*, A. Austin Dobson, 1899.

Oglio. River of Italy, an affluent of the Po. It rises in the Alps in the neighbourhood of Mte. Adamello, and flows in its upper course through Val Camonica to the Lago d'Inco. Issuing from the S. end of the lake, it crosses the plain of Lombardy by a curved course, receiving from the left the Mella and Chiese, to join the Po 10 m. S.W. of Mantua. Its total length is 130 m.

Ogmore. Dist. of Glamorgan-shire, Wales, part of the urban dist. of Ogmore and Garw. It is 9 m. from Bridgend, with a station on the G.W. Rly., and is a coal-mining centre. Ogmore-by-the-Sea is 3 m. from Bridgend. Here are remains of a castle dating from Norman times. Ogmore is also the name that is given to a small river. Pop. 27,000.

O'Grady, STANDISH (b. 1846). Irish author. Born Sept. 18, 1846, he was educated at Tipperary Grammar School and Trinity College, Dublin. His literary work, both as historian and as novelist, marks the starting point of the modern Irish literary revival. His publications include *The History of Ireland, Heroic Period*, 1878; *History of Ireland, Critical and Philosophical*, 1881; *The Coming of Cucaulain*, 1894; *Chain of Gold*, 1895; *Ulrick the Ready*, 1896; and *The Flight of the Eagle*, 1897. He also edited *Pacata Hibernia*, 1896.

Ogre. In folklore, a monstrous giant who eats human flesh. The word, which is French, is probably derived from the Latin *Orcus*, god of the infernal regions.

Ogygia. In Greek mythology, the island upon which Odysseus spent eight years in dalliance with the nymph Calypso, until the gods sent Hermes to tell her to let him go. See *Calypso*; *Odyssey*.

O'Higgins. Inland prov. of Central Chile. Bounded N. by Santiago and S. by Colchagua, the E.

portion is traversed by the Andes, the surface sloping W. to the fertile valley of Chile. The N. boundary is partly traced by the river Maipo, while the Rapel flows along its S. frontier. The chief products are wheat, wine, and fruit, and cattle-rearing and gold-mining are carried on. The capital is Rancagua, 40 m. by rly. S. of Santiago. Area, 2,168 sq. m. Pop. 97,000.

O'Higgins, AMBROSIO (c. 1720-1801). S. American administrator and soldier. Of humble parentage,



Ambrosio O'Higgins,
S. American administrator

he was sent from Ireland to his uncle, a Jesuit in Seville, who, finding him unsuited for the Church, dispatched him to S. America. Peddling as he went, he made his way across

the Andes to Chile and on to Lima, where he kept a stall and trafficked in mules. Driven thence by the Inquisition, he returned to Santiago, where he obtained a government contract to build rest-houses on the mountain roads.

In 1770 Higgins was sent to suppress a rising of the Araucanian Indians, whom he defeated, but he won their goodwill after peace was concluded. He was made intendente of Concepción in 1786, and two years later captain-governor of Chile with the title of marquis of Osorno. He governed with an iron hand, repaired roads, encouraged trade, and checked official corruption. Promoted viceroy of Peru in 1796, he thus became the king of Spain's representative in S. America. O'Higgins was the first and greatest of the many Irish who acquired fame in S. America. He died Feb. 18, 1801.

O'Higgins, BERNARDO (1778-1842). Chilean soldier and statesman. Born at Chillan, Aug. 20, 1778, natural son of Ambrosio O'Higgins, he was educated in England, returning to his own country in time to join the movement for independence. In 1813 he was made commander-in-chief, and in 1817 dictator of the country, in which capacity he formally declared its independence of Spain in 1818. He then drove out the Spanish troops and set about organizing the government of the country.



Bernardo O'Higgins,
Chilean soldier

He resigned in 1823, and lived in retirement at Lima until his death, Oct. 24, 1842. See *The Independence of Chile*, A. S. Chisholm, 1911.

Ohio. River of the U.S.A. Commercially the most important, and, next to the Missouri, the largest tributary of the Mississippi river, the Ohio is formed by the union of the Monongahela and the Allegheny rivers at Pittsburg. It flows generally S.W. for 975 m., joins the Mississippi at Cairo, and during its course separates West Virginia and Kentucky from Ohio, Indiana, and Illinois. It has a breadth varying from rather less than $\frac{1}{2}$ m. to a little more than $\frac{3}{4}$ m., and drains an area exceeding 200,000 sq. m. Among its principal affluents are the Tennessee, Cumberland, Wabash, Kentucky, Kanawha, and Big Sandy. In addition to Pittsburg and Cairo, the towns standing on its banks are Cincinnati, Paducah, Marietta, Louisville, Evansville, and Mount Vernon.

The Ohio, except for a short distance at Louisville, where there is a fall of 26 ft. in 2 m., is navigable for large vessels throughout its length, although delay is caused during drought periods by the low level of the water, and at other times by flood. A canal with locks was constructed to overcome the obstruction caused by the falls. See *The Ohio River*, A. B. Hulbert, 1906.

Ohio. North-central state of the U.S.A. Its area is 41,040 sq. m., or nearly one-third larger than Scotland. The state is crossed from N.E. to S.W. by a low hill ridge, whence the surface slopes to Lake Erie in the N. and to the Ohio river in the S. The Maumee, flowing into Lake Erie, is the chief northern river; the S. part of the state is watered by many affluents of the Ohio, which have cut deep valleys through the sandstone rocks.

Ohio produces large quantities of maize, wheat, and oats, besides tobacco, hay, potatoes, fruit, etc.; stock-raising is a valuable interest. The coalfields comprise an area of nearly 12,000 sq. m., and natural gas, petroleum, limestone, and other minerals are obtained. The important manufactures include iron and steel products, flour, and rubber goods. The State, Ohio, and Miami universities are among higher educational institutions. Besides the lake, river, and canal facilities, 9,130 m. of steam and 4,050 m. of electric rlys. are available for transport. Two senators and 22 representatives are sent to Congress. Columbus is the capital and Cleveland and Cincinnati the largest cities. Ohio was admitted to the Union in 1803. Pop. 5,759,000. See *The Old North-*

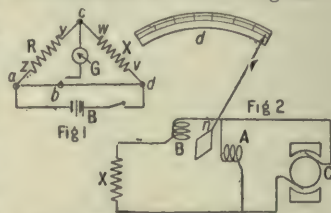
West, B. A. Hinsdale, 1899; Ohio, S. S. Wilson, 1902; Ohio, R. King, 1903.

Ohlau. Town of Upper Silesia. It stands on the confluence of the Ohle and the Oder, 16 m. S.E. of Breslau. The buildings include a castle and several churches. There are tobacco and cigar factories; machinery and shoes are manufactured. It has also lime kilns and a horse and cattle market. Ohlau was made a town in 1290 and was at one time a residence of the Sobieski family. It became Prussian with the rest of the Silesian duchies in 1742, and after the peace treaty of 1919 was in a plebiscite area. Pop. 9,000.

Ohligs. Town of Germany, in the Rhine prov. of Prussia. It is a rly. junction 16 $\frac{1}{2}$ m. N. of Cologne, on the edge of the industrial area of Westphalia, and has manufactures of cutlery and other steel goods. Pop. 21,000.

Ohm. Unit of electrical resistance. The resistance of a circuit is 1 ohm when a pressure of 1 volt is required to cause a current-flow of 1 ampere. See Unit, Electrical.

Ohmmeter. Apparatus for measuring the electrical resistance of a conductor in ohms or megohms.



Ohmmeter. Diagrams illustrating types of instruments for measuring electrical resistance. See text

The Wheatstone bridge ascertains the resistance of a conductor by balancing it against a conductor of known resistance. The arrangement of parts is shown diagrammatically in the illustration, Fig. 1. Screw-posts *a b c d* are connected by conductors *a b*, *d b*, of equal resistance; *c* and *b* by a conductor which includes galvanometer *G*. An adjustable resistance *R* is inserted in branch *a c*; and the conductor *X* to be tested in branch *d c*. The parts *a z*, *c y*, *c w*, *d v* have equal resistance. Current flows from battery *B* to *a*, and reaches *d* by alternative paths. If the resistance of *a c* be greater than that of *c d*, some of the current passing through *a b* will be shunted through "bridge" *b c* and *c d*, causing a deflection of the needle of *G*. If *X* offers more resistance than *R*, current reaching *c* through *R* will be partly shunted through *c b* and *b d*, and deflect the galvanometer needle in

the opposite direction. It is therefore obvious that if R be so adjusted that the galvanometer is not affected, the resistance of $a c$ = resistance of $c d$, or deducting equal parts, resistance of R (known) = resistance of X .

In another type of instrument, Fig. 2, a magnetic needle is subjected to the influence of two coils A and B , arranged at right angles to one another. Each coil, when current passes through it, tries to turn the needle into a line parallel to its own axis. A magneto machine supplies current to two screw-posts which are connected by coil A , and also by coil B in series with the conductor X under test. Assuming X to offer infinitely great resistance, all the current will pass through A , and the pointer attached to the needle will move into the infinity position at one end of the scale of the dial. If, however, any current passes through X , coil B acts in opposition to A , and the deflection of the pointer is modified accordingly. The graduation of the dial scale is based upon tests made with resistances of known magnitude.

O. H. M. S. Abbrev. for On His (or Her) Majesty's Service.

Ohm's Law. In electricity, a law defining the relationship between electromotive force (E.M.F.), the resistance of a circuit, and the flow of current through the circuit. It was first investigated by a German, G. S. Ohm, who stated the law that in any given circuit the ratio of the E.M.F. producing a current to the current produced depends on the resistance of the circuit. Thus, if E =E.M.F. or pressure (in volts), C =current (in amperes), R =resistance (in ohms), $R=E/C$; $C=E/R$; $E=C \times R$. See Electricity.

Ohnet, GEORGES (1848-1918). French novelist. He was born in Paris, April 3, 1848, and after the Franco-Prussian War successively edited *Le Pays* and *Le Constitutionnel*. In 1877 his first play, *Regina Scarpi*, written in collaboration, was produced, and in 1880 his first



Georges Ohnet,
French novelist

novel, *Serge Panine*. His most famous story, *Le Maître de Forges*, appeared in 1881, and in dramatic form achieved a great success both in France and in England, where it was given as *The Ironmaster* and *Lady Clara*. He wrote many popular romances of modern life charac-

terised by melodramatic plots and somewhat over-wrought passion. He died in Paris, May 5, 1918.

Ohthers (fl. 880). Norse navigator. He entered the service of Alfred the Great, who described two of his voyages in his translation of Orosius. Ohthers sailed round the North Cape, explored the Murman coast, and discovered the White Sea.

OIL: ITS PRODUCTION AND USES

J. T. Smith, Editor of *The Petroleum World*

This is one of a group of articles dealing with the commercial products of the world, the others including Coal, Cotton, and Rubber. It is followed by a section on Oils and Fats. See also Mexico; Mining

Oils may be divided into three groups: mineral oils, and those natural substances present in animal and vegetable organism.

MINERAL OIL. Petroleum, or rock oil, is a liquid, in most cases of a dark brown, black, or dark green colour, and is the raw material from which petrol, paraffin oil, lubricating oils, fuel oil, paraffin wax for candles, and many other products are manufactured. Its main constituents are carbon and hydrogen. Under various names and in various countries it has been known since ancient times.

Methods of Mining

The ordinary method of mining for petroleum is by means of wells, which may be of any depth up to 4,000 or 5,000 ft., drilled by powerful machinery, and lined with iron or steel tubes, called casing, through which the petroleum is conveyed to the surface. A tower-like structure of wood or steel, called a derrick, from 80 to 130 ft. in height, is built upon the site of the proposed well, and this is used to contain the drilling machinery and as a support in raising and lowering the drilling tools and the lengths of casing. The stratum in which the petroleum occurs is porous, usually sandstone or limestone. In the petroleum industry it is known as the oil sand. If the petroleum, called crude oil or simply oil, is in moderate quantity, it is brought to the surface by pumping or baling. If it is met with in abundance, the flow to the surface takes place of its own accord, and sometimes this flow is of sufficient force to eject the oil scores of feet into the air. Such wells are known as gushers or spouters. Occasionally the flow of oil is so violent as to demolish the derrick and flood the area about the well. By far the more numerous class of oil wells, however, yield by pumping or baling.

The crude oil has to be treated for the purpose of obtaining from it

Oich, Loch. Lake of Inverness-shire, Scotland. It is 4 m. long and about $\frac{1}{4}$ m. broad, and is the summit level (105 ft.) of the Caledonian Canal. It has a depth of 155 ft., and fills part of the Great Glen. The Glengarry flows into the loch, which is drained by the Oich ($\frac{3}{4}$ m. long) into Loch Ness at Fort Augustus. Trout and salmon are plentiful.

various products. The first operation is to heat it in a large vessel known as a still. When the oil has reached a moderate temperature, vapours are given off, which are led away by pipes and condensed, the resultant liquid being known as petrol distillate. This is treated by chemicals to improve its colour and remove any objectionable smell, and it is then ready for use in the motor-car, being known in Great Britain as petrol or motor spirit, and in the United States and Canada as gasoline. Meanwhile the application of greater heat to the remaining oil sets free another set of vapours, which when condensed and purified becomes paraffin oil. With yet higher ranges of temperature lubricating oils are obtained; and the residue left in the still may in some cases be used as fuel oil. Some crude oil is not suitable for distilling as above; in those cases it is heated sufficiently to remove the petrol, the remainder being used as fuel oil in ships, railway engines, or factories. Again, crude oils of one class yield paraffin wax, and those of another class yield asphalt.

Transportation of Crude Oil

Crude oil, in countries where it is abundant, is transported through pipe lines, some of which are many hundreds of miles in length. The liquid products mentioned above are, as regards overland carriage, conveyed in railway tank wagons or steel barrels. Tank steamships are the principal means of carriage by sea, and most of the oil products brought to the United Kingdom come this way, ships with a carrying capacity of over 18,000 tons having been constructed in recent years. Oil and its products are usually stored in circular steel tanks, which vary in size from a few hundred gallons upwards, the largest having a capacity of about 10,000 tons. Throughout Great Britain there

are now hundreds of depots at which various petroleum products are stored in bulk, and which serve as distributing centres to the adjacent localities.

In the 20th century the world's production of petroleum increased very largely, owing to the opening up of new oilfields. It is now more than 100,000,000 tons per annum, of which the U.S.A. produces about 65,000,000 tons, Mexico about 25,000,000 tons, and the British Empire less than 2,000,000 tons, principally from Burma, Egypt, and Trinidad. Russia produces about 4,500,000 tons, the Dutch East Indies over 2,000,000 tons, Rumania 1,200,000 tons, and Persia, where the oilfields are under British control, about 1,000,000 tons. As the Empire consumes about three times as much oil as is produced within its borders, recent discoveries of oil in the N.W. of Canada and elsewhere are of considerable importance.

OIL IN GREAT BRITAIN. In October, 1918, the first well drilled in Great Britain for oil was started at Hardstoft in Derbyshire, and at the end of the following May it began to produce oil at the rate of about 1 ton per day. About a dozen other wells have been drilled, but none has found oil in appreciable quantities. The best scientific opinion, however, inclines to the belief that oilfields of moderate yield are possible in Great Britain. By the Petroleum (Production) Act, 1918, the crown alone has the right to drill for oil in Great Britain; but it may license other parties to drill; and three or four such licences have been issued.

Uses of Oil

Without petrol, motor and aeroplane traffic would be practically impossible, for even though substitute fuels might be used for these purposes their quantity is comparatively insignificant. Paraffin oil is still the world's chief illuminant where gas and electricity are not available. For modern machinery the lubricating oils obtained from petroleum are essential, alone or with an admixture of vegetable oil. Oil fuel is being used to a greater extent every year, and is employed by the largest and most modern British liners. The navy now uses it almost exclusively. Its use on British railway engines in place of coal has begun; and many electric power plants burn the liquid fuel. From some crude oils an oil fuel can be obtained suitable for use in the internal combustion engine, or "oil engine," which is proving an economical source of power without the necessity for raising steam. The household candle

of to-day is usually made of paraffin wax; vaseline is much used in medicine; and there is a large demand for petroleum asphalt for road-making, roofing, and other purposes.

OILS AND FATS. The oils present in animal and vegetable organisms form a homogeneous group, those which are solid above 68° F. being called fats, the remainder being liquid fats or oils. They are neutral bodies with an unctuous feel and, when pure, are tasteless and odourless. Practically insoluble in water and—except castor oil—in cold alcohol, they dissolve in ether, benzene, and in one another. They leave on paper grease-spots which are irremovable by evaporation. All lighter than water, their specific gravity ranges from 0.913 in rape oil to 0.975 in so-called Japan wax.

Varieties of Oils

These fatty or fixed oils differ from essential oils and volatile mineral oils in not being volatile without decomposition. Composed of carbon, hydrogen, and oxygen, they are mixtures of two or more triglycerides, which are compounds of the alcohol glycerin with two or three of the fatty acids. Of these the commonest are the liquid oleic and the solid palmitic and stearic acids, which in combination with glycerin form water and the triglycerides triolein, tripalmitin, and tristearin respectively. True waxes—including sperm oil—differ from them in containing alcohols other than glycerin. Above 572° F. all are decomposed, the glycerin being broken up into water vapour and acrolein, which causes the penetrating odour of burning oil.

When treated with superheated steam they are hydrolysed or broken up into their glycerin and fatty acid constituents. When they are boiled in caustic alkalis this hydrolysis is called saponification, the fatty acids being converted into soaps. In airtight vessels oils and fats keep indefinitely, but in the presence of water and natural enzymes hydrolysis sets in, free fatty acids are released, become oxidised on exposure to air and light, and give rise to the condition described as rancid.

Fixed oils and fats are essential for human food, are of great importance as medicines and unguents, and furnish raw materials for soaps, candles, burning oils, lubricants, paints, varnishes, leather-dressing, linoleum manufacture, and the like. On exposure to air some become oxidised and form an elastic skin. This property is utilised in their classification, thus:

(1) Vegetable: Oils—drying (linseed); semi-drying (cotton-seed, colza); non-drying (almond, olive, castor). Fats—palm, cacao, coconut, ghee butter.

(2) Animal: Oils—marine (fish, liver, blubber); terrestrial (neat's-foot). Fats—drying (rattlesnake); semi-drying (rabbit, horse); non-drying (lard, tallow, butter).

(3) Drying oils usually contain trilinolenin, and semi-drying oils trilinolin; linseed oil has 71 p.c. of the one and 13 p.c. of the other.

Methods of Extraction

The proportion of oil in seeds and fruits ranges from 85 p.c. in white mustard to 18 p.c. in soya bean. Apart from primitive manual processes, extraction is effected in three ways. Rendering, chiefly applied to animal fats, consists in heating the sodden material, with or without an acid, in open kettles or closed autoclaves. Pressure is chiefly applied to oil-seeds and nuts, which are prepared by decorticating, crushing, grinding, and moulding, the meal being then subjected to hydraulic pressure between open plates or in closed cylindrical cage-presses. Cold-pressed or cold-drawn oils are pale, and furnish the salad and virgin oils of commerce. Hot-pressing may follow, and the residual meal-cake, still retaining 7–10 p.c. of oil, makes cattle-food.

The highest possible oil-yield is attained by employing hot or cold solvents, chiefly carbon disulphide or tetrachloride, petroleum ether, and benzene. The residual cake may have only 1 p.c. of oil. Further processes include filtering, refining, bleaching, and deodorising.

Tallows and lard are rich in tristearin, palm oil in tripalmitin, olive oil in triolein. Oleic acid, present in most oils, differs from stearic acid only in containing two atoms less of hydrogen. As the glycerides of the fats are needed more and more for foodstuffs and cannot be spared for other purposes means have been devised for hydrogenating or hardening oils into fats. A favourite method of effecting this is to treat triolein with powdered nickel in the presence of hydrogen, which transmutes it into tristearin. Cotton-seed and whale oil are thus converted into frying fats and materials for margarine, and these synthetic fats serve to supplement the supply of natural tallows for soap and candles.

In 1919 the United Kingdom imported nuts, kernels, and seeds to the value of £55,536,000; vegetable oils, £21,800,000; animal oils, oleomargarine, and tallow, £18,360,000; oil-cake, £5,821,000;

butter, lard, and margarine, £31,555,000; total, £133,072,000.

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Oil Beetle. Family of beetles possessing an apparent "neck" between head and thorax. The

Oil Engine. Name given to a type of internal combustion engine. The term is chiefly used for those engines which burn heavy oil, requiring special heating or spraying arrangements in order to make them vaporise and form the explosive mixture. Light oil, or refined petroleum, is easily vaporised at atmospheric temperatures. The heavy oil may be vaporised either in the cylinder, or outside it. All heavy oil engines work on principles similar to those described under Internal Combustion Engine, the chief difference being in the methods necessary to vaporise the oil before an explosive mixture can be formed in the cylinder. The oil is usually forced under pressure through a spraying

height of about 30 ft., with a stout stem bearing at its extremity a crown of magnificent feather-like leaves, 15 ft. long. The male and female flowers are borne usually by separate trees, but sometimes on the same tree. The bright red fruits, which yield palm oil, form large, oval heads. The oil is obtained principally from the external fleshy coat, by boiling the fruits in water, and skimming the orange-red butter-like fat off the surface. The seed, which is enclosed in a hard shell, also yields oil under pressure. It is used as a lubricant and also in the making of margarine.

Oil Rivers Protectorate. Name formerly applied to the coastal districts in the estuary of the Niger. In 1885 the Berlin Conference acknowledged that a British Protectorate had been virtually established over these regions, and an order in council defined the boundaries of the territory. The British commissioner was stationed at Old Calabar. In 1893 the Oil Rivers Protectorate became part of the Niger Coast Protectorate, afterwards the Protectorate of S. Nigeria. See Nigeria.

Oil Shale. Name given to shale which contains petroleum. The oil is not, in general, present in sufficient quantities to make it commercially profitable to extract. There are extensive oil shale deposits in N. America, notably in Utah and New Brunswick, and deposits are worked in Scotland, France, and New South Wales. See Oil; Shale.

Ointment. Preparation consisting of an active drug mixed with a fatty substance, intended to be applied to an external surface. The substances most frequently used as the basis of an ointment are lard, olive oil, wax, paraffin, and hydrous wool fat.

Oise. Dept. of France. In the N. of the country, its area is 2,272 sq. m. The surface is hilly, and across the dept. flows the Oise. Other rivers are the Aisne, Brèche, Nonette, and Ourcq. The soil is fertile. Wheat and other cereals are grown, cattle are reared, and there are many dairy farms. Here are the forests of Chantilly and Compiègne. The chief town is Beauvais; others are Chantilly, Noyon, Clermont, Compiègne, Creil, and Senlis. Partly overrun by the Germans in Aug.-Sept., 1914, and again in June-Oct., 1918, there was furious fighting in the dept. at both times. Pop. 411,000.

Oise. River of France. Rising near Chimay, in the Ardennes, in Belgium, it enters France, and after flowing past Guise receives the



Oil Beetle. Male and, right, female of *Meloe violaceus*

name is especially applied to the genus *Meloe*, of which Great Britain possesses seven species. When alarmed, a reddish oily fluid exudes from the joints of their legs, probably serving as a defence against enemies. The larvae are parasites in the nests of wild bees. See Beetle, colour plate.

Oilcake. Term originally applied to linsced cake (*q.v.*). It is now used also for other kinds of cake rich in oil. See Coconut Cake; Cotton Cake; Earth-nut Cake; Palm-nut Cake; Rape Cake.

Oil City. City of Pennsylvania, U.S.A., in Venango co. It stands on the Allegheny river, 130 m. by rly. N. by E. of Pittsburgh, and is served by the Pennsylvania and other rlys. Its buildings include the city hospital and the Standard Oil Co.'s building. Situated in the Pennsylvania oil region, it is concerned chiefly with the refining of petroleum. Settled in 1825, Oil City was incorporated in 1863 and chartered as a city in 1871. Oil was first discovered in the locality in 1859. Pop. 21,300.

Oilcloth. Name given to a type of floor covering. It consists of coarse canvas coated on both sides with a thick oil paint. The canvas is prepared for the paint by passing it through liquid glue, varnish, etc., pressing between heavy rollers, drying, and rubbing with pumice-stone. The paint is applied in a number of coats, each being smoothed with pumice-stone, and the final pattern applied by machinery in a way analogous to printing. The quality of the oilcloth depends chiefly upon the number of separate coats of paint applied. See Floorcloth; Linoleum.

nozzle, mixed with hot air, when it becomes vaporised ready for exploding by the ordinary electric spark. See Diesel Engine; Internal Combustion Engine; Locomotive.

Oilfield. Term used to describe a region of the earth which yields mineral oil, whether directly in the liquid form, or contained in oil-bearing rocks. See Baku; Petroleum.

Oil-gas. Gas obtained by the dry distillation of oil. Of high luminosity in a compressed form, it was supplied in London in 1815 as an illuminant. It was made by Taylor's patent, and it was from the liquid hydrocarbons, which separated out from oil-gas when compressed, that Faraday first prepared benzene, a discovery which laid the foundation of the aniline colour industry. Coal-gas being much cheaper than oil-gas, its manufacture was discontinued, until revived by Pintsch, in 1871, for illuminating carriages.

Oil Palm (*Elaeis guineensis*). Tree of the natural order Palmae, native of W. Africa. It grows to a



Oil Palm. Crown of feather-like foliage. Inset, part of fruit head

waters of the Serre and the Ailette. Near Compiègne the Aisne flows into it; other tributaries are the Thérain and the Brèche. It falls into the Seine, 40 m. below Paris, after a course of 186 m. For about 60 m. the river is canalised and linked up by canals with the waterways of Belgium and N. France. The battle known to the French as that of the Oise, in the Great War, began Aug. 16, 1918. It was opened by the French by heavy bombardment and patrol encounters between the Aisne and Oise on a front of 20 m. In the infantry attack General Mangin took 13,000 prisoners and 300 guns. See Laon, Battle of.

Ojibwas or **CHIPPEWAS**. North American Indian tribe of Algonquin stock. The name, meaning "roast-till-puckered-up," alludes to their puckered moccasins. Established N. of Lake Superior from time immemorial, they moved W. until their range embraced 3,000 m. Owing to their remoteness from early colonial contact, they long maintained their tribal organizations in comparative purity. Living in birchbark wigwams, and using canoes for fishing, their possession of the wild-rice (*zizania*) region led to warfare with the Dakotas. They number about 30,000. See American Indians, colour plate.

Oka. River of central Russia. It rises near Ochka, in the govt. of Orel, and flowing alternately N. and W. through several governments for 950 m., discharges itself into the Volga at Nijni-Novgorod. It connects the industrial and grain-producing districts of the country, and is nearly everywhere navigable.

Okanagan. River of Canada, in British Columbia, affluent to the Columbia river. With its numerous tributaries it drains the W. slopes of the S. Monashee Mts. and the Gold Range, which separate its basin from that of the Kootenay and Upper Columbia. Its upper valley is filled mainly by the narrow Okanagan Lake, 80 m. long; thence it flows S. through smaller lakes into the U.S.A., to join the Columbia river at Brewster, after an additional 120 m.

Okapi (*Ocapia johnstoni*). Ruminant mammal related to the giraffe. First discovered by Sir Harry Johnston, in 1901, in the Semliki forest of Central Africa, though supposed to have been seen by Stanley some years earlier, it is about as large as a mule, and the general colour of the pelt is blackish brown, with yellow legs striped horizontally with black. The neck is long in proportion to the body, and the head is giraffe-like, with

large, upstanding ears. The male has two short pedicles of bone arising from the head, like the so-called horns of the giraffe. The okapi lives in the densest parts of the forest, and appears to go in small herds. Some skins and skulls have been brought to Europe.

Okayama. Town of Japan, in Honshu. Situated 240 m. by rly. from Shimonoseki, on the route to Kobe, it stands on a wide alluvial plain in the lower course of the Asahi river, 7 m. from its mouth. Branch rlys. run to Uno, Tatai, and Tsuyama, the Uno line providing connexion with Shikoku. The castle is in ruins, the park, one of the most beautiful in the country, extends over 22 acres, and there are three Buddhist temples. Cotton and silk yarns, cotton goods, and rice are the chief products. Pop. 94,000.

Okeechobee. Lake of Florida, U.S.A. The largest lake in the S. portion of the U.S.A., it borders the Everglades on the S., and is 40 m. long by 28 m. broad, its area being about 730 sq. m. Canals link it up with the Caloosahatchee river, by which it is partly drained. It has a depth of about 20 ft., but its depth and size are diminishing.

Okehampton. Mun. bor. and market town of Devonshire, England. It is on the N.W. edge of Dartmoor, where the rivers East and West Okement meet. It is 26 m. from Exeter by the L. & S.W. Rly. The church of All Saints is modern, save for its noble tower, and there are the remains of a 15th century castle, including parts of the chapel and banqueting hall. Okehampton was a bor. before 1086, and had then a castle. It sent two

members to Parliament until 1832. Outside the town are artillery ranges. Market day, Sat. Pop. 3,200.

Okhotsk, SEA OF. Gulf in the Pacific Ocean. It is formed by the peninsula of Kamchatka, the Maritime Province of Russia, and the islands of Sakhalin, Yezo, and Kurile. It is 1,535 m. long and 795 m. broad, and is much visited by American whale-fishers. On the N. shore is the small town of Okhotsk, in the Maritime Province.

Oki Islands. Archipelago of Japan, in the Japan Sea, W. of Honshu. The group is 44 m. from Sakai, on the mainland, with which a regular ferry service is maintained from Saigo, the administrative centre for the islands.

Oklahoma. State of U.S.A. One of the W. South Central States, it became a member of the Union in 1907. It lies between Texas and Kansas, E. of Arkansas. Part of the great basin of the Mississippi, it is a rolling plain varying in elevation between 1,000 and 2,500 ft., rising gradually from E. to W.; in the extreme N.W. it reaches 5,000 ft. The plains are almost treeless, and are scarred by cañons cut by the rivers; the rugged Ouachita (Washita) Mts. in the S. rise to 3,000 ft. Much of the state is arid, and the rivers, of which the chief are the Arkansas, Cimarron, Canadian, and Red, are frequently waterless during hot summers. Maize, wheat, oats, cotton, and potatoes are the principal crops; horses, cattle, and sheep are reared; petroleum, coal, natural gas, lead, and zinc are the chief minerals.

Part of their territory was ceded by the Indians to the U.S.A. in 1866; from 1889 to 1903 various sections were laid open for white settlers. Oklahoma Territory was created as an administrative unit in 1890, and with Indian Territory became a state in 1907. Its area is 70,057 sq. m. Serious racial riots occurred in the state in June, 1921. Pop. 2,028,000.

Oklahoma. City of Oklahoma, U.S.A., the state capital and the co. seat of Oklahoma co. It stands on the North Fork of the Canadian river, 31 m. S.S.W. of Guthrie, and is served by the Missouri, Kansas, and Texas, and other rlys. Prominent buildings are the capitol and Epworth University. A trade in cattle, fruit, cereals, cotton, and oil is carried on, and flour, machinery, and soap are manufactured. Oklahoma City was settled in 1889, and chartered as a city in 1891. Pop. 91,300.

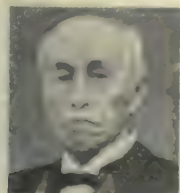
Okuma, SHIGENOBU, MARQUIS (1838-1922). Japanese statesman. Born at Saga, Hizen, he came into



Okapi. Specimen of the Central African ruminant

By courtesy of Dr. Michel L'Hoest, of the Royal Zoological Society, Antwerp

prominence in 1868 as a leader in the reform party which agitated for the abolition of the feudal system.



Count Okuma,
Japanese statesman

He received an appointment in the department of foreign affairs, became finance minister, 1869-81, foreign minister, 1888-89, minister of agriculture and commerce, 1896-97, and prime minister in 1898, and again 1914-15. He was the author of *Fifty Years of New Japan*, 1910. He died Jan. 10, 1922.

Olaf I TRYGGVESSÖN (c. 960-1000). King of Norway, 995-1000. He had made expeditions to England, and even perhaps as far as Italy, when he returned to Norway, overcame Haakon Jarl, and secured his throne. Having become a Christian, he sought to make his people Christians also, founding a bishopric at Nidaros or Trondhjem, and building the first Norwegian churches. In 1000 he was attacked by the sons of Haakon Jarl, aided by the kings of Denmark and Sweden. Defeated in a sea fight at Svoldr, he leaped into the sea and was drowned.

Olaf II (995-1030). King of Norway, 1015-30, and saint. He was a descendant of Harold Fair-Hair, and during his years of sea-faring, in which he is said to have captured London on behalf of Ethelred, he was converted to Christianity in England. When he became ruler of Norway, which he made into one kingdom, he spread Christianity with insistent severity. The smaller rulers having banded together, called Canute of Denmark to their aid, and Olaf fled to Russia, 1028. Two years later he returned and fell in battle at Stiklestad, July 29, 1030. He was canonised in 1164, and recognized later as Norway's patron saint.



Olaf II,
King of Norway
From a statue by
Michelsen

Öland. Island off the S.E. coast of Sweden. It is separated from the mainland by Kalmar Sound, is 88 m. in length, and from

5 m. to 10 m. broad. Wooded in parts, it has good pasture ground, and corn is grown near the coasts. Chalk, alum, and sandstone are exported, but the chief occupation is fishing. Borgholm on the W. coast is the chief town. Öland is rich in barrows, stone monuments, and other antiquities. Pop. 40,000.

Olavarria. Town of Argentina, in the prov. of Buenos Aires. It is 195 m. by rly. S.S.W. of Buenos Aires City, on the line to Bahía Blanca via Saavedra.

Old Age Pensions. Grant made to aged persons by the state. In the United Kingdom the idea was long advocated by social reformers, but little practical progress was achieved until 1893, when a royal commission was appointed to consider the question,

to all old age pensioners who were entitled under the Acts to pensions. In April, 1919, the government set up a committee to consider what alterations as regards rates or qualification should be made. As the result of its report a bill was introduced into Parliament and became law in Dec., 1919. It raised the pension from 7s. 6d. to 10s. a week, the increase taking effect on Jan. 1, 1920. The new scheme raised the income limit of eligibility to £49 17s. 6d. per annum, removed the outdoor relief and imprisonment disqualifications, and ruled out of account as income sick-pay under a medical certificate for three months in a year; and the value of the furniture.

In Jan., 1924, the scales of pensions in relation to income were:

SCALE OF OLD AGE PENSIONS IN THE UNITED KINGDOM

| 10s. per week. | Where yearly income does not exceed £26 5s. | |
|----------------|---|---------------------------------|
| 8s. | " " | is between £26 5s. and £31 10s. |
| 6s. | " " | " £31 10s. and £36 15s. |
| 4s. | " " | " £36 15s. and £42 |
| 2s. | " " | " £42 and £47 5s. |
| 1s. | " " | " £47 5s. and £49 17s. 6d. |

but its members could not agree on a workable scheme. In 1899 a select committee, presided over by Henry (later Viscount) Chaplin, suggested a definite scheme. In 1905 two bills were introduced into Parliament embodying many of the Chaplin committee's recommendations, but nothing came of them. In his budget speech of 1907, H. H. Asquith announced a definite scheme of old age pensions. The first Act was passed in 1908, and came into force on Jan. 1, 1909.

To qualify for a pension the recipient must have reached the age of 70 years, and be a British subject of 10 years' standing. If a natural-born British subject, he or she must have been resident in the U.K. for twelve out of twenty years up to date of receiving pension. If not natural-born, he or she must have been resident for twenty years previous to receiving the pension. The minimum pension of 1s. a week is paid to a person whose income does not exceed £49 17s. 6d. per annum. Previous to the 1919 Act the income limit was £31 10s. The first rate of pension was 5s. per week, payable at any post office, to all men and women qualified.

From time to time new conditions have governed the scheme. In 1916 the government made a grant to meet the cost of allowances, up to a maximum of an additional 2s. 6d. a week, to those suffering special hardship due to war conditions. In 1917 the grant of the additional allowance of 2s. 6d. was extended

Those unable to follow their employment in consequence of blindness could obtain a pension at 50.

In Mar., 1922, there were 1,029,367 old age pensioners, of whom 717,303 were in England, 44,655 in Wales, 96,539 in Scotland, and 170,870 in Ireland. The 1919 Act had by Mar., 1922, added nearly one hundred and ten thousand extra pensioners. The cost for 1921-22 was estimated at £26,000,000. The cost of old age pensions is paid from the imperial funds, and the administrative authority is the ministry of health in England and Wales, and the local government board of Scotland. Since April, 1922, the Irish Free State was responsible for its own payments.

Pensions are paid in Australia and New Zealand, the qualifying age being 65. Australia pays 10s. a week, and New Zealand, originally fixing the pension at £18 per annum, increased it to £26 per annum in 1905. In Germany the system, which dates from 1891, is both compulsory and contributory; in France the system, dating from 1911, is also contributory, and the age limit 65. Denmark instituted pensions, in 1891, to all over 60 years of age. See N.V. G. A. LONK.

Old Bailey. London thoroughfare. It runs S. from Newgate Street to Ludgate Hill, E.C. At its N.E. corner is the Central Criminal Court (q.v.), on land occupied by old Newgate (q.v.) prison, opposite which were set up the pillory,

whipping post, and gallows. There was a prison here in the 12th century. A mansion of the Sidneyes stood in the Old Bailey, Camden was born in this thoroughfare, William Hone and Jonathan Wild lived in Ship's Court, and Oliver Goldsmith in Green Arbour Court. The Old Roman Wall extended along the E. side. The name is derived from the old court of the city chamberlain, or from the *ballium* or outer space near the wall at Ludgate. See The Old Bailey and Newgate, C. Gordon, 1902.

Oldbuck, JONATHAN. Laird of Monkbarns in Scott's novel *The Antiquary* (*q.v.*), a character whose learning, wit, and drollery are combined with the foibles of an elderly bachelor. He had a prototype in George Constable, an old friend of the father of the novelist.

Oldbury. Urbanist. and market town of Worcestershire, England. It is 5 m. from Birmingham, with a station on the L. & N.W. Rly., and is on the Birmingham canal. Standing on the coalfield of the Black Country, its industries include steel works, iron foundries, and the manufacture of nails, tools, chemicals, etc. Pop. 32,000.

Oldcastle, SIR JOHN (d. 1417). English Lollard, known also as Lord Cobham. He is first mentioned as serving in the Welsh marches in 1401. In 1409 he married Lady Cobham, of Cooling, Rochester, and was summoned to Parliament as a baron. He was



Sir John Oldcastle,
English Lollard

high in the favour of Henry, prince of Wales, afterwards Henry V, but in 1413 was charged with heresy, and after several citations was arrested, tried, and sentenced to death. Escaping from the Tower, he was engaged in a Lollard conspiracy which nearly brought about a rebellion. Many leaders were arrested, but Oldcastle remained in hiding until 1417, when he was captured, taken to London, and hanged Dec. 14, 1417. He was the original of Falstaff in Shakespeare's *King Henry IV* (*q.v.*). See Lollards; consult also Life, published by The Malone Society, 1908.

Old Catholics. R.C. congregations, chiefly in Germany, Holland, and Switzerland, who have separated from the Church of Rome mainly on the question of papal infallibility. The movement originated in a conference at Munich in 1863 under the presidency of Dr. Dollinger, which was attended

by about a hundred scholars and priests, with the purpose of uniting German R.C. divines in the work of promoting unity in religion and scientific thought.

Jesuit influence resulted, Dec., 1869, in the summoning of the Vatican Council, which in the following June voted on the question of the infallibility of the pope when defining doctrine *ex cathedra*. The opposing bishops handed in a protest and left Rome before the session of July 18, which almost unanimously passed the decree.

Most of the opponents subsequently submitted under pressure; but Dollinger and Friedrich refused on the grounds that papal infallibility was contrary to Scripture and tradition, condemned by previous Councils, based upon unauthentic authorities, and incompatible with civil order. As a result, both were deposed and excommunicated. Dollinger then called together an Old Catholic Congress, which met at Munich in Sept., 1871, and issued a manifesto asserting adhesion to Catholic doctrine, and to the ancient constitution of the Church, repudiating papal infallibility, and declaring a desire to reform the Church and bring about reunion with the Oriental and other episcopal churches. Old Catholic Churches were opened in various towns in Germany and Switzerland.

A second Congress, held at Cologne in Sept., 1872, was attended by the archbishop of Utrecht, bishops of the Anglican and American Churches, and a representative of the Russian Church, among about 500 other deputies. In 1873 Dr. Reinkens was consecrated the first bishop of the Old Catholics by the Jansenist bishop of Deventer, according to the Roman rite. See Dollinger; Infallibility; Jansenism; Papacy; Vatican Council; consult also *The Story of the Old Catholic and Kindred Movements*, A. M. E. Scarth, 1883.

Old Curiosity Shop, THE. Charles Dickens's third novel, begun in the fourth issue of *Master Humphrey's Clock*, April, 1840, and concluded in the number for Jan. 17, 1841. The illustrations were by George Cattermole and Phiz. The theme of the story is an old man's affection for his granddaughter, for whose sake he becomes a hopeless gambler. Little Nell (*q.v.*), Daniel Quilp, with his mis-shapen mind and body; Sampson and Sally Brass, a rascally attorney and his sister; Dick Swiveller and the Marchioness are among the more famous creations of the novelist. One of many adaptations of the story for the

stage was made by Charles Dickens, jun., in 1884. See *Marchioness, The*.

Oldenburg. Free state of Germany. It consists of three portions, Oldenburg, Birkenfeld, and Lübeck, and its total area is 2,452 sq. m., of which 212 are in Birkenfeld and 209 in Lübeck. Oldenburg proper is almost surrounded by Hanover; its coast-line is mainly formed by the bay of Jade. The surface is flat and the physical features resemble those of Holland, from which it is only divided by a piece of Hanover. It is watered by the Weser and its tributary, the Hunte, the Haase, and the Leda. Agriculture is the chief occupation. Cattle, sheep, and horses are reared in large quantities, and wheat, rye, oats, and other cereals grown. Oldenburg is the capital; other places are Varel and Delmenhorst. Birkenfeld and Eutin are the capitals of the two smaller parts of the republic. Birkenfeld is near Worms, about 150 m. from Oldenburg. The pop. is 518,000, of which 421,500 are in Oldenburg, 45,500 in Lübeck, and 51,000 in Birkenfeld. The republic is governed by a Landtag of 48 members, elected for five years.

The first count of Oldenburg appeared about 1200. In 1448 Count Christian became king of Denmark, and in 1454 he gave up his county to his brother. Its boundaries were enlarged by various counts. From 1702-73 it was again under the kings of Denmark, passing in 1773 away from them to Count Frederick Augustus, and in 1777 it was made a duchy. The Napoleonic wars added both Birkenfeld and Lübeck, a secularised bishopric, to Oldenburg, which was made a grand duchy in 1829. A liberal constitution was granted in 1849. In 1871 Oldenburg joined the new German empire, and in Nov., 1918, the grand duke abdicated and the state became one of the German republics. See Birkenfeld.

Oldenburg. Town of Germany, the capital of the free state of Oldenburg. It stands on the Hunte, 27 m. from Bremen, being served by both railway and canal, and consists of an old, or inner, town and surrounding suburbs. The chief buildings are the two palaces, until 1918 the residences of the ruling family, the restored church of S. Lambert, and the old and the new town hall; also two museums, hospitals, and a theatre. In the Augusteum, a fine Renaissance building, is a collection of pictures, formerly belonging to the grand duke, and there are two large libraries. The industries include some small manufactures, and a

trade in agricultural produce. Oldenburg became a fortified town in the 12th century and gave its name to the county, afterwards the grand duchy. Pop. 30,000.

Oldfield, ANNE OR NANCE (1683-1730). English actress. Introduced to the stage by Farquhar and Van-



Anne Oldfield,
English actress

brugh, she first attracted attention at Drury Lane by her creation of two comedy rôles, Lady Betty Modish in Colley Cibber's *Careless Husband*, and Bid-

dus Tipkin in Steele's *Tender Husband*. She played original parts in Addison's *Cato*, Rowe's *Jane Shore* and Lady Jane Grey, and Thomson's *Sophonisba*. She died Oct. 23, 1730. A comedy by Charles Reade, entitled *Nance Oldfield*, was produced at The Olympic, Feb. 24, 1883.

Oldfield, JOSIAH. British physician. Born at Shrewsbury and educated at Oxford University, he early took an interest in the abolition of capital punishment and the advocacy of fruitarian diet. He founded the Society for the Abolition of Capital Punishment, 1901, and wrote *The Ideal Diet in Relation to Real Life*, 1892; *Tuberculosis, or Flesh-eating a Cause of Consumption*, 1897; *The Penalty of Death*, 1901.



Josiah Oldfield,
British physician
Elliott & Fry

Old Forge. Bor. of Pennsylvania, U.S.A., in Lackawanna co. It stands on the Lackawanna river, 5 m. S.W. of Scranton, and is served by the Delaware, Lackawanna, and Western rly. It manufactures silk, chemicals, and glass, and has a large trade in anthracite, mined in the neighbourhood. Old Forge was settled in 1830, and incorporated in 1899. Pop. 12,200.

Oldham. Mun. and co. borough of Lancashire, England. It stands on the Medlock, 6 m. from Manchester, with stations on the L. & N.W., G.C., and L. & Y. Rlys. It is also served by a canal. The principal buildings are the town hall, a copy of the temple of Demeter, near Athens, art gallery and



Oldham arms

museum, county court, and post office. The Lyceum contains an observatory. There are a number of modern churches, and the schools include technical schools, a blue-coat school, and the Hulme Grammar School. The town is a centre of the cotton manufacture, especially the spinning branch. In addition machinery, velvets, silks, satens, and other textiles are made. Around are coal mines. Alexandra Park is a recreation ground. Fairs are held, and the Oldham Wakes, held at the end of Aug., are a feature of the town. In the 17th century Oldham became a manufacturing centre and at one time its chief product was hats. About 1790 the manufacture of cotton was introduced, and with the opening of the coalfield the town grew enormously. It began to send two members to Parliament in 1832, but was not made a corporate town until 1841. Market days, Mon. and Sat. Pop. (1921) 145,000.

Oldham, JOHN (1653-83). English poet. Born near Tetbury, in Gloucestershire, Aug. 9, 1653, and educated at S. Edmund Hall, Oxford, he was for a brief period a school-master and tutor, and was then befriended by the earl of Kingston, at whose place, Holme Pierrepont, in Nottinghamshire, he died of small-pox, Dec. 9, 1683. Oldham's reputation rests chiefly on his satires, especially *Satires upon the Jesuits*, 1681. These, though rugged in versification, are interesting as being the lineal predecessors of some of the satirical writings of Pope.

Oldhill. District of Staffordshire, England. It is 3 m. from



John Oldham,
English poet
After Dobson



Oldham, Lancashire. Parish church of S. Peter, built in 1754

Valentine

Dudley, with a station on the G.W. and L. & N.W. Rlys. It stands on a coalfield and in the Birmingham area, and the chief industry is the manufacture of hardware. Pop. 11,000.

Old Jewry. London street. Leading N. from Poultry to Gresham Street, E.C., and known in 1181 as *The Jewry*, and later as *Colechurch Lane* and *Sakfrerelane*, it was once a Jewish quarter. In 1641 Sir Robert Clayton built a house here, which became the first home of the London Institution in 1806, and was taken down in 1863. The headquarters of the city police were here until removed to Moor Lane in 1917.

Old Maid. Simple card game. The cards are dealt out in the usual way to the players, of whom there is no specific number, the queen of hearts alone being reserved. Each player discards all the pairs in his hand. This done, the dealer offers his cards, face downwards, to the one next him, who selects one, and if possible uses it to discard another pair. This process continues until all the cards have been discarded except an odd queen. The holder of this is the old maid. Another name for the game is the black lady.

Old Man OR LAD'S LOVE. Popular name for southernwood (*Artemisia abrotanum*). See *Artemisia*; *Southernwood*.

Old Man Cactus (*Pilocereus senilis*). Succulent perennial herb of the natural order Cactaceae. A native of Mexico and Guatemala, it has a fluted cylindrical stem from 20 to 25 ft. high, the ridges bearing tufts of long white spines and long white hairs.

Old Man of the Sea, THE. Character in *The Arabian Nights' Entertainments* (q.v.). In his fifth voyage Sindbad the Sailor, having been wrecked, assists a helpless old man by carrying him on his back. The old man twines his legs round Sindbad's neck and cannot be dislodged until he has been made drunk.

Old Masters. Term applied to painters of a bygone age, and of established reputations; also used of the works produced by them. See *Art*; *Painting*.

Old Mortality. First of Scott's *Tales of My Landlord* ("arranged by Jedediah Cleishbotham, school-master and parish-clerk of Gandercleugh"), and fourth of the *Waverley* novels. It was published with *The Black Dwarf* in Dec., 1816. The title was suggested by the hobby of Robert Paterson, a stone-cutter who wandered about Scotland for some forty years repairing the graves of the Covenanters, of whose fiery zeal the

novel contains many vivid pictures, together with graphic impressions of the battles of Drumclog and Bothwell Brig. The marriage of the hero, Henry Morton, with the heroine, Edith Bellenden, is brought about by one of the most convincing love-stories that Scott ever wrote.

Old Red Sandstone. In geology, name given to a series of Palaeozoic rocks. They are named from their commonest constituent, red sandstone, but the series also contains grey, yellow, and green sandstones, and limestones and clay beds. The rocks of the group are of immense thickness, computed to be 20,000 ft. thick in Scotland, and are called Old to distinguish them from similar deposits of a later period of geological time. The series lies below the Carboniferous strata. The time of the formation of Old Sandstone rocks corresponds to that of the Devonian marine deposits. The series is found in Scotland, Wales, Ireland, Russia, where it alternates with Devonian deposits, Scandinavia, and N. America. In some Old Red Sandstone rocks fossils are wanting, in others there are remarkable remains of fossil fishes and plants. See Devonian; Triassic; consult also The Old Red Sandstone, H. Miller, new ed. 1869.

Old Testament. Name given to the collection of books which form the first part of the Bible and give an account of the history and religion of the Jewish people from the earliest times to the beginning of the Christian era. From one point of view, the O.T. is the literature of the Jewish nation; from another, it is the record of the Divine education of Israel for the reception of the Christian Revelation.

The books as they stand in the English Bible were written during the 600 years between 750 and 150 B.C., but many of them embody documents and excerpts which go back to a much earlier period. It was only gradually, however, that these books were collected together into what is known as the O.T. canon. The process of forming the canon took about 500 years. It commenced about 440 B.C. and was not finally completed till the synod of Jamnia, in A.D. 90.

There are three well-defined stages in the growth of the O.T. (1) The earliest canon, which was formed about 440, contained the Pentateuch, or rather the Hexateuch—for the book of Joshua was included. The explanation of the canonisation of the Pentateuch is to be found in the fact that it contains the Law of God, on which the whole national life was centred.

(2) About 200 years later the first edition of the O.T. was expanded by the addition of the prophetic writings, or the major part of them, among which were included the historical books known as Samuel and Kings. (3) During the last two centuries B.C. various other additions were made at different times, known as "the writings," including Job; The Psalter, the Minor Prophets, Proverbs, Ecclesiastes, Chronicles, etc.

For some time several of these books were the subject of considerable controversy, e.g. Esther, Ecclesiastes, etc., but by the decision of the synod of Jamnia their inclusion in the canon was finally sanctioned. It was the destruction of Jerusalem and the loss of the Temple that finally gave the O.T. its supreme place in the religion of the Jewish race, while its adoption by the Christian Church secured it



Oleander. Flowers and leaves of the evergreen shrub

a position which it could not otherwise have gained. The process of enlarging the canon was continued in Alexandria, after it was completed in Palestine. The Alexandrians made a fourth addition to the O.T., consisting of the books which are now placed in the Apocrypha (q.v.). This addition is recognized as canonical by Roman Catholics, but not by Protestants. See Bible; Criticism, Biblical; Hexateuch; and the articles on the various books



Oleandra. Rootstock with leaves, one turned to show spores

and characters; consult also The Canon of the Old Testament, H. E. Ryle, 1892.

Old Trafford. Suburb of Manchester. In the W. of the city proper, it is served by the L. & N.W., G.C., and Cheshire Lines Rlys. Here is the cricket ground of the Lancashire club and near is Trafford Park (q.v.). See Manchester.

Oleaceae. Olive family, a natural order of trees and shrubs. They are natives of the tropical and temperate regions, chiefly of the N. hemisphere. They have opposite leaves and four-parted flowers, the calyx and corolla being sometimes absent. Representative genera are *Olea* (olive), *Fraxinus* (ash), *Jasminum* (jessamine), *Syringa* (lilac), and *Ligustrum* (privet).

Olean. City of New York, U.S.A., in Cattaraugus co. It stands at the junction of the Olean Creek and the Allegheny river, 70 m. S.S.E. of Buffalo, and is served by the Erie and other rlys. Its buildings include the state armoury and a memorial hospital. It contains a noted driving park, and near by is Rock City, a group of uniform conglomerate rocks about 40 acres in area. Olean lies near the Pennsylvania oil and natural gas region, in whose produce it largely trades. Other industries include tanneries and engineering works. Settled in 1804, a city charter was granted to Olean in 1893. Pop. 20,500.

Oleander (*Nerium oleander*). Evergreen shrub of the natural order Apocynaceae, native of the Mediterranean region. The erect stems grow to a height of 14 ft., and the narrow lance-shaped, leathery leaves are in whorls of three. The large, bright-red, funnel-shaped flowers are produced in clusters. The plant grows by riversides, and all parts of it are extremely poisonous, so that great care is required in handling it, pruning, etc.

Oleandra. Small genus of tropical ferns, natives of Ceylon, Natal, N. India, Malaya, Mascarenes, and the W. Indies. Their average height is 1 ft., and they thrive in hot-houses in a mixture of peat and loam. They should be planted in early spring, and receive plenty of water until the autumn. Oleandras are propagated by spores from the back of the leaves of the ferns, sown in sandy soil at an average temperature of 75°.

Olearia. Genus of trees and shrubs of the natural order Compositae, natives of New Zealand and parts of Australia. They are distinguished by the fact that

they yield a multitude of small white or blue daisy-like flowers. *Olearia haasti* is the most familiar of the many species.

O'Leary, Michael (b. 1890). British soldier. Born at Inchigeela, near Macroom, Ireland, Sept. 2, 1890, he entered the navy, serving in H.M.S. Vivid, then joined the Irish Guards in 1909, being transferred to the reserve in July, 1913. He served in Canada with the N.W. Mounted Police, and on the outbreak of the Great War rejoined the colours, and went to France in Nov., 1914. When a lance-corporal in the Irish Guards, he won the V.C. at Cuinchy, Jan. 31, 1915, for capturing single-handed two German positions, killing eight Germans and taking two prisoners. In Oct., 1915, he received a commission in the Connaught Rangers, later rising to rank of captain and serving with the Salonica expeditionary force. In 1920 he rejoined the Canadian Mounted Police. See V.C. Heroes of the War, G. A. Leask, 1916.



Michael O'Leary.
British soldier

Oleaster (*Elaeagnus*). Genus of shrubs of the natural order Elaeagnaceae, natives of Europe, Asia, and N. America. The shrubs range in height from 5 to 20 ft., and thrive



Oleaster. Spray of foliage and flowers

in any ordinary soil, especially in S. or W. positions. They are increased by seeds sown in boxes of light soil in early spring, or by cuttings taken in the autumn. The flowers are yellow, white, and occasionally green in colour.

Olefines. Hydrocarbons having the general formula C_nH_{2n} . The simplest representative of the series is ethylene, C_2H_4 , also known as olefiant gas. The lower members are gases at the ordinary temperature, and are followed by



Olearia. Flower clusters and leaves of *O. haasti*

others which are liquids and solids. The distinction between the olefines and the paraffins is that the olefines combine directly with chlorine and bromine, even in the dark, to form dichlorides or dibromides. See Hydrocarbon.

Oleic Acid. Colourless oily liquid prepared by saponifying fats and oils. It occurs as the glyceride triolein, in non-drying oils, such as those of the almond, olive, and cod-liver, and in solid fats such as lard, tallow, palm oil, and butter. Oleic acid is prepared by saponifying almond oil with potash, decomposing the soap with hydrochloric acid, and heating with lead oxide for some hours. The lead oleate formed is separated by means of ether, and to the solution thus formed hydrochloric acid is added. Impure oleic acid is made on a large scale.

Oleic acid becomes yellow with keeping, and acquires an acid reaction and rancid odour. When fused with caustic potash, a mixture of potassium acetate and palmitate is obtained, which process can be employed for the manufacture of palmitic acid. When dissolved in concentrated sulphuric acid, sulpholeic acid is formed. Sodium oleate is the principal constituent of hard soap, and lead oleate is the chief part of lead plaster.

Olein. Commercial term applied to triolein, the glyceride of oleic acid, and to any liquid oil obtained from fats by pressure. It is also applied to impure oleic acid and to the sulpholeates. Triolein occurs naturally in fats and oils, and can also be prepared by heating glycerin with oleic acid. It is a colourless oily liquid, devoid of smell and taste. The olein made by pressing palm oil is distinguished as palm olein, and that from the coconut as coconut olein. Olein is made on a large scale commercially for the manufacture of margarine (*q.v.*).

Olekma. River of Siberia, in the prov. of Yakutsk. Rising in the Yablonoi Mts., it flows in a N.

direction and discharges itself into the Lena, after a course of 700 m. The neighbourhood abounds in furred animals, especially the sable, and gold is found.

Ole Luköie (Dan., Olaf the Eye-shutter). The Danish equivalent for the legendary character known to children as the Dustman. It is the title of one of the stories of Hans Christian Andersen. Ole Luk-Oie is also the pen-name adopted by Col. E. D. Swinton. See Andersen, H. C.; Swinton, E. D.

Olenek. River of Siberia. Rising on the borders of the gov't. of Yeniseisk, it flows through Yakutsk. After a course of 850 m. it discharges itself into the Arctic Ocean at Ust-Olenok.

Olenellus. Genus of trilobites belonging to the Lower Cambrian series of rocks. The animal had a flat, tapering body of 14 or more jointed segments, covered with a hard shell like a lobster. The head was comparatively large and broad, and the tail long and slender. The body, head, and tail were usually provided with slender spines. *Olenus* is a similar fossil belonging to the Upper Cambrian series of rocks. They are the oldest fauna discovered by geologists. See Trilobites.

Oleograph (Lat. *oleum*, oil; Gr. *graphein*, to write). Name given to a kind of chromolithograph which imitates the effect of an oil painting. The colours used are generally darker than the corresponding ones for ordinary chromolithographs, and the resultant print is mounted on canvas and varnished, to imitate still more closely the oil-painting effect. See Lithography.

Oléron. Island off the W. coast of France. Belonging to the dept. of Charente-Inférieure, it is opposite the mouth of the Charente, and its chief town and harbour is Château d'Oléron. It has salt and fish-salting industries and vineyards, and a narrow gauge rly. Pop. 17,000.

Oléron gave its name to a code of maritime law. This was composed of judgements of the maritime court here, together with a collection of the accepted customs of the sea. It was introduced into England in the 12th century, England and Aquitaine being then under the same sovereign, and had an important influence on later developments of this branch of law.

Olfactory Nerve. Nerve of smell. It arises from the brain by three roots, uniting in the olfactory tract, which expands at its end into the olfactory bulb. From the bulb about 20 fine prolongations are

given off, which pass through the cribriform plate of the ethmoid bone, and terminate in the olfactory mucous membrane in the upper part of the nose and nasal septum. *See Nerve; Nose.*

Olga (d. 968). Russian saint. She was the peasant wife of Igor, third grand duke of Russia, who first met her while hunting, and married her about 913. She became regent for her son, Sviatoslav, and is said to have been a capable ruler. After Igor's death, 946, she carried out a terrible vengeance on the Drevliens, who were guilty of his death. She went to Constantinople, where she was baptized and received the name of Helen. She was canonised by the Greek Church. Her feast day is July 11, O.S.

Olhão. Seaport of Portugal, in the prov. of Faro. It stands on the S. coast in a garden-like region, facing the Atlantic, 6 m. by rly. E. of Faro. It is noted for its sardine fisheries and canning houses, and engages in boat-building and the manufacture of cordage and sails, exporting figs, almonds, carobs, chestnut, cork, sumach, baskets, and tunny fish. Pop. 10,000.

Olibanum Tree (*Boswellia serrata*). Small evergreen tree of the natural order Burseraceae,



Olibanum Tree. Foliage and fruit of the East Indian evergreen. Inset, flower sprays

native of the East Indies. Its leaves are divided into two rows of oval-oblong leaflets with saw-toothed edges. The small white flowers are borne in sprays. From the bark exudes a resinous gum, olibanum, believed to be the frankincense of the ancients. It is astringent and stimulant, but is chiefly employed as incense. According to some authorities true frankincense is the product of *B. carteri*, an African species.

Olifants. Name of several rivers in S. Africa, of which the following are the chief: (1) River

rising in the mountains N.E. of Cape Town and flowing about 150 m. N.W. to the Atlantic. It supplies irrigation water to Van Rhyn's Dorp. (2) River rising in the Kareeberg, Cape Province, and flowing N.W. into Great Bushmanland. (3) Tributary of the Gouritz river, Cape Province, flowing W. from the neighbourhood of Uniondale. (4) Tributary of the Limpopo, rising in the neighbourhood of Ermelo, S.E. Transvaal, and running N. and then E. to the Limpopo, which it enters in Gazaland, Portuguese East Africa.

Oligarchy (Greek *oligo*, few; *archein*, to rule). Political term, meaning government by the few. It was used by Aristotle to describe a perverted form of aristocracy; it was government by the few in their own interests, whereas aristocracy was government by the best men in the public interest. Some of the city states of Greece had an oligarchical government, and so had Venice and other Italian republics. A well-known British example was the Whig oligarchy created by the events of 1688. *See Government; Politics.*

Oligocene System (Greek *oligon*, a little; *kainos*, new). In geology, a subdivision of the Tertiary period of time. It was the epoch which followed the Eocene and preceded the Miocene. Rocks of the Oligocene system are found in wide areas in Central and S. Europe, and in the Isle of Wight and Hampshire in England. In N. America the rocks are found in the famous White River formations of Colorado, and also in the North-West Territory of Canada, etc. Oligocene rocks consist of limestones, grits, shales, conglomerates, and marls, and fresh and salt water sand, etc. They are rich in fossil remains, including that of the three-toed horse, *Meshippus*, crocodiles, turtles, large land snails, many insects, etc. The gypsum of Montmartre, the millstone grits of Montmorency, the lignite deposits at Halle, etc., all belong to the Oligocene system. *See Eocene; Miocene.*

Oligoclase (Gr. *oligon*, little; *klasis*, fracture). In geology, name given to one of the plagioclase or soda lime feldspars found in granite, rhyolite, etc. It is a calcium aluminium silicate, white with occasional grey, green, or red shades, and has a vitreous lustre. Varieties of oligoclase containing finely scattered grains of iron oxide are polished to make the gems known as sun stones. Oligoclase is found in Europe and N. America.

Olinda. City of Brazil, in the state of Pernambuco. It stands on the coast, 4½ m. by tramway

N. of Recife or Pernambuco, of whose wealthy classes it was long a favourite residence. It has a cathedral and other fine churches, botanical gardens, colleges, law school, and a wireless telegraphy station. It was founded in 1535, and was the capital of the state for over 200 years, until superseded by Recife. Pop. 8,000.

Oliphant, LAURENCE (1691-1767). Scottish Jacobite. A member of the family of Oliphant of Gask, prominent Perthshire royalists, he took part in the rising of 1715, and became laird of Gask on his father's death. 1732. He accompanied



Charles Edward in the '45, and, with his son Laurence (1724-92), fought at Prestonpans, Falkirk, and Culloden. After Culloden father and son escaped abroad and the estate was forfeited. He returned to Scotland in 1763, his lands having meanwhile been purchased on his behalf from the crown, and died in Jan., 1767. *See Nairne, Baroness.*

Oliphant, LAURENCE (1829-88). British author. He was born at Cape Town, a son of the attor-

ney-general of Cape Colony, educated in Ceylon, and practised at the colonial bar for a brief period. In 1853 he became private secretary to the earl of Elgin, govern-



or-general of Canada, and took part in the negotiations leading up to the reciprocity treaty with the United States. Leaving the diplomatic service, he sat in Parliament for three years without making any particular mark. In 1867 he fell under the influence of Thomas Lake Harris (*q.v.*), and for a short time joined his religious community at Brocton, N.Y. Oliphant afterwards acted as correspondent for *The Times* in the Franco-Prussian War, and interested himself in a scheme for settling the Jews in Palestine. He died Dec. 23, 1888. Among his works are several books descriptive of his travels; *Piccadilly*, 1870, a brilliant book of satirical observations; the mystical *Sympneumata*, 1885; and *Scientific Religion*, 1888. His Life was written by a distant relative, Margaret O. Oliphant.

Oliphant, MARGARET OLIPHANT (1828-97) British author. Born April 4, 1828, she made her reputation with her first book, *Passages in the Life of Mrs. Margaret Maitland*, 1849, and thereafter produced more than a hundred books, remarkable for their high level of merit and unflagging freshness. In 1859 her husband, Francis Wilson Oliphant, died, and her industry was the sole support of her own three children, and after 1864 of a widowed brother and his three children as well. Mrs. Oliphant died at Windsor, June 25, 1897. Among her best known novels are *Caleb Field*, 1851; *Lilliesleaf*, 1855; *Zaidee*, 1856; *Salem Chapel*, 1863; *The Rector and the Doctor's Family*, 1863; *The Minister's Wife*, 1869; *The Wizard's Son*, 1884; and *Kirsteen*, 1890. She also wrote historical works and popular biographies of Edward Irving, 1862, and S. Francis of Assisi, 1871.



M. O. Oliphant,
British author

Olivares, GASPARD DE GUZMAN, COUNT OF (1587-1645). Spanish statesman. Born at Rome, Jan. 6, 1587, he was educated at Rome and Salamanca. Securing a position at court, he became first minister of the crown and grand chamberlain to Philip IV, and for 24 years was the real ruler of Spain. While vigilant and hardworking, he brought the country to the verge of ruin by harsh taxation. Olivares was exiled in 1642 and died July 22, 1645.



Count of Olivares,
Spanish statesman

Olive (*Olea europea*). Small evergreen tree of the natural order Oleaceae (*q.v.*), native of the Mediterranean region. It attains a height of about 20 ft., has almost four-sided spiny branches and opposite oblong leaves. The small, white, funnel-shaped, fragrant flowers are produced in panicles, and the fruit is a small plum. This is the wild form. Pickled olives and olive-oil are the produce of the variety *sativa*, which has been cultivated from time immemorial. It differs from the wild form in the branches being less square, without spines, the leaves more lance-shaped, and the fruit much larger and more fleshy. The oil is obtained from the fleshy part

of the fruit by pressure, but much of the "olive-oil" of commerce is more or less extensively adulterated with oils of cotton-seed, monkey-nut, sesame, and walnut. Pickled olives have had their natural bitterness reduced by soaking in a solution of lime and wood-ashes, after which they are bottled in salt and water, variously flavoured.

The olive is cultivated occasionally in Britain as a greenhouse plant, and outdoors in a few favoured S. and W. localities. It is of easy culture in well-drained loam, and may be propagated by means of cuttings of firm shoots or by seeds, treated as half-hardy subjects. Several species from the Cape of Good Hope (*O. capensis*, *O. laurifolia*, *O. verrucosa*) are found in cultivation.

Olive Branch Petition. Name given to a petition by the American colonists in 1775 pleading for the recognition of their constitutional claims by the British Government. The petition was a last effort for a peaceful settlement, though hostilities had already begun when it was sent. The deputation was not allowed to present the petition. *See* United States: History.

Olive Oil. Oil obtained from the ripe fruit of *Olea europea*, the olive tree of S. Europe. Extensively used in cookery in S. Europe, it is chiefly employed in the N. for preparing salad. It is a soothing application for burns, and has been prescribed in the treatment of gall-stones. It is a useful mild purgative for children.

Oliver (Lat., olive). Masculine Christian name. Feminines are Olive and the less familiar Olivia. Oliver was the name of one of the twelve peers of Charlemagne, and the phrase a Roland for an Oliver refers to the tremendous blows struck by these heroes when fighting in Spain. *See* Roland.

Oliver, FREDERICK SCOTT (b. 1864). British author. Born in Edinburgh, he was a son of



Olive. Spray of foliage and fruit of the South European evergreen

John S. Oliver and a grandson of Duncan M'Laren, M.P. Educated at Edinburgh and Trinity College, Cambridge, he became a barrister, but entered business life and devoted some of his time to literature. He wrote *Alexander Hamilton*, An Essay on American Union, 1906, and *Ordeal by Battle*, 1915, a scathing attack on British shortcomings as revealed by the Great War.

Oliver OR OLIVIER, ISAAC (c. 1556-1617). Anglo-French miniature painter. Little is known of his life save that he had some connexion with Rouen. Afterwards he settled in London, where he died Oct. 2, 1617, being buried in S. Anne's Church, Blackfriars. Among his famous miniatures were those of Sir Philip Sidney and Prince Henry of Wales, both at Windsor Castle. He also executed some minutely finished portraits in oils.

Oliver Twist. Charles Dickens's first long continuous story. It appeared in Bentley's Miscellany,



Oliver Twist astounds the workhouse authorities by daring to ask for more gruel for his supper. From the illustration by J. Mahoney

Feb., 1837-March, 1839, with illustrations by Cruikshank. Branding the old workhouse system and magisterial tyranny, it pictures contemporary crime in its "miserable reality." The more notable scenes are those in the domain of Bumble, and in Fagin's kitchen, the burglary at Chertsey, the murder of Nancy by Bill Sikes, and his escape and death. Edward Sterling, 1839, John Oxenford, 1868, and J. Comyns Carr, 1905, dramatised the novel, J. L. Toole's Artful Dodger, Irving's Sikes, Tree's Fagin, and the Nancy of Charlotte Cushman and Constance Collier being memorable.

Olives, MOUNT OF, OR OLIVET. Mt. about 2,700 ft. high, situated E. of Jerusalem, from which it is separated by the valley of the Kidron.



Mount of Olives, from the Kidron valley. In the foreground to the right is the Tomb of Absalom; above is the Russian Gethsemane Church

Its chief associations are with the life of Christ. On the brow of the mountain He wept over Jerusalem; and from its summit He ascended into heaven. See Bethany.

Olivetans. Reformed branch of the Benedictine Order, known as the Congregation of Our Lady of Mount Olivet. It was founded in 1313 at Siena by Giovanni de' Tolomei, professor of philosophy in the university there, who became their first abbot-general in 1319. The Olivetans follow the rule of S. Benedict, but with somewhat stricter observances.

Olivia. Heroine of Shakespeare's comedy Twelfth Night (*q.v.*).

Olivia. Domestic drama. Founded by W. G. Wills on a leading incident in The Vicar of Wakefield, it was produced March 28, 1878, at the Court Theatre, London, where it had a run of 138 performances. The play was revived May 27, 1885, at The Lyceum by Henry Irving, who assumed the part of Dr. Primrose.

Olivier, SYDNEY OLIVIER, BARON (b. 1859). British administrator. Educated at Lausanne, and Oxford, he entered the colonial office in 1882. He was acting colonial secretary, British Honduras, 1890-91, auditor-general Leeward Islands, 1895-96, colonial secretary of Jamaica, 1899-1904, and acting governor, 1900, 1902, and 1904, becoming governor, 1907-13. He was permanent secretary of the board of agriculture and fisheries, 1913-17, and was secretary of state for India, Jan.-Nov. 1924. Among his published works are Poems and Parodies, 1881; and White Capital and Coloured Labour, 1906. He was created K.C.M.G. in 1907, and Baron Olivier, of Ramsden, 1924.

Olivine. In mineralogy, a ferrous and magnesium orthosilicate. So called from its usual olive-green colour, the mineral is a common

constituent of igneous rocks, especially basalts, and is often found in meteoric stones. Cut and polished, it is used as a gem stone under the names of chrysolite and peridot. Olivine easily weathers into serpentine or hydrated magnesium silicate. See Chrysolite; Peridot; Serpentine.

Olla Podrida (Span., putrid pot). Name originally given to

fragments of meat, vegetables, etc., collected in a pot, and later to the favourite Spanish dish of highly seasoned stew. The name alludes to the contents of the pot being cooked until the solid parts fall to pieces, and the French equivalent is *pot-pourri* (putrid pot), most familiar in the sense of a vase of dried flower-petals. The term, like hotch-potch, is also applied to any miscellaneous collection, such as a literary or musical medley.

Ollerton. Market town of Nottinghamshire, England. It stands on the river Maun, 9 m. N.E. of

1863. In Dec., 1869, he was charged with the formation of a ministry by Napoleon III, and with him in office France entered on the war of 1870. Retiring to Italy, 1871-73, he made four unsuccessful attempts to re-enter the chamber, and wrote many articles and books on political subjects. He was elected to the Académie Française in 1870. He died at St. Gervais-les-Bains, Savoie, Aug. 20, 1913.

Olmütz OR OLOMOUČ. Town of Czecho-Slovakia, in Moravia. It stands on the right bank of the March, 41 m. N.E. of Brünn. The site of the fortifications is laid out with promenades, and there are a park and a kursaal. The cathedral of S. Wenceslaus is a 14th century Gothic structure, and S. Mauritius' Church, belonging to the 11th and 12th centuries, is noted for its organ. Other buildings include the archiepiscopal palace and the old town hall. Olmütz was unsuccessfully besieged by the Prussians in 1758. Pop. 50,000.

Olmütz, CONVENTION OF. Agreement signed at Olmütz, Nov. 29, 1850, by Austria and Prussia. It restored the Austrian, as against the Prussian, influence among the German states, shaken by the events of 1848-49, and left the difficulties in Hesse-Cassel and Schleswig-Holstein to be settled by all the German states. See Germany: History.

Olney. Market town of Buckinghamshire, England. It stands on the Ouse, 11 m. from Bedford and 59 m. from London, with a station on the Mid. Rly. Its large and beautiful church of S. Peter and S. Paul is a fine example of the

Decorated style. Olney is known for its associations with William Cowper and John Newton. Cowper's house in the market place is now a museum devoted to the two men. Olney was once a centre of the lace industry. Brewing and the making of boots and shoes are now carried on. Market day, Thurs. Pop. 2,700.

Olney, RICHARD (1835-1917). American statesman. Born at Oxford Massachusetts. Sept. 15, 1835, he was called to the Boston



Olney, Buckinghamshire. Summer-house in the garden adjoining Cowper's house, where The Task and John Gilpin were written

Mansfield, and has a station on the G.C.R. It is a convenient centre for visitors to Sherwood Forest and the Dukeries (*q.v.*). Pop. 700.

Olivier, OLIVIER ÉMILE (1825-1913). French politician. Born at Marseilles, July 2, 1825, he joined

the Paris bar, and was elected deputy for the Seine, 1857, one of the five opposition members, but became reconciled to the Empire after his re-election in



Emile Olivier



Richard Olney, American statesman

bar in 1859, and became attorney-general in 1893, and secretary of state 1895-97. His action in advising and defending the use of troops to stop the rly. strike in Chicago, 1894, caused much adverse criticism. An upholder of the Monroe Doctrine, he took an uncompromising attitude towards Britain in the British-Venezuelan boundary dispute. He died April 8, 1917.

Oloneys. Govt. of N.W. Russia. It is bounded by the govts. of Archangel, Vologda, Novgorod, Petrograd, and Finland, and its area is 49,355 sq. m. The chief river is the Onega, and the numerous lakes, among them Ladoga and Onega, occupy one-fifth of the total area. The extensive forests impede agriculture, and the inhabitants are chiefly occupied in fishing and hunting furred animals. Mineral wealth exists in the form of silver, iron, and copper, and marble quarries. Pop. 476,000.

Olsson, Julius (b. 1864). British artist. Born in London, he specialised as a marine painter.



Julius Olsson,
British artist
Russell

His pictures of the Cornish coast and the open sea are marked by skilful blending of colours in reproducing the play of light on water. Elected A.R.A., 1914, he became

R.A. in 1920, and president of the Royal Institute of Oil Painters and medallist of the Paris Salon. An example of his work is in the Tate Gallery, London.

Olstfold. Fylke or co. of Norway. Completely a lowland, it lies at the N.E. of Christiania Fiord, with Sweden to the E. Crossed by the lower Glommen, it contains numerous lakes. Fredrikstad, Fredrikshald, and Sarpsborg are the chief towns, all on the rly. from Christiania to Sweden. Its area is 1,600 sq. m. Pop. 160,000.

Olten. Town of Switzerland, in the canton of Solothurn. On the river Aar, 25 m. by rly. S.E. of Basel, it is an important rly. junction with large rly. engineering workshops. It is a tourist resort, and manufactures footwear. The parish and Capuchin churches contain some noteworthy pictures. Pop. 9,300.

Oltenitza. Town of Rumania. It stands on the left bank of the Danube, 35 m. S.E. of Bukarest, at the mouth of the Argeaul. It is a river port and terminus of a branch rly. from the capital. Pop. 6,000.

Oltu. Rumanian name of the tributary of the Danube known also as the Aluta (q.v.).

Olympia. Small plain in Elis in the Peloponnese, Greece, in ancient times the scene of the Olympic Games (q.v.). It was situated on the right bank of the river Alpheus where it joins the Cladeus.

Olympia. City of Washington, U.S.A., the state capital and the co. seat of Thurston co. It stands on a promontory at the S. extremity of Puget Sound, 70 m. by rly. S.W. of Seattle, and is served by the Northern Pacific Rly. and by steamers. The capitol, the supreme court building, and the federal building are among its chief structures. The Deschutes river supplies water power for its industries. Olympia was settled in 1846, and received a city charter in 1859. It has been the state capital since 1853. Pop. 7,800.

Olympia. London place of entertainment. Situated near Addison Road station, in the bor. of Hammersmith (q.v.), it was opened in 1886 for agricultural shows, but has been chiefly used for spectacular shows, horse shows, military tournaments, etc. It covers six acres, and has a vaulted glass and iron roof. Efficiency, Ideal Home, and other exhibitions have been organized at Olympia by The Daily Mail, the 25th birthday of which paper was celebrated here on May 1, 1921, when 7,000 guests were entertained at luncheon by Viscount Northcliffe.

Olympiad. The period of four years which elapsed between each celebration of the Olympic games. The olympiad was the basis of a system of chronology used by the Greek historians, events being reckoned as so many olympiads from the first celebration, of which a record of victors was preserved.

Olympic. White Star liner. Launched at Belfast in 1911, she displaced 46,359 tons, and during the Great War was employed as a troopship. In 1914 she rescued the crew of the Audacious (q.v.). Attacked by submarines, she escaped, and herself rammed at least one German U-boat. Her captain, Bertram F. Hayes, R.N.R., was knighted in 1919, and in 1920 the liner resumed her normal cross-Atlantic passenger service, having meantime been adapted to burn oil in place of coal.

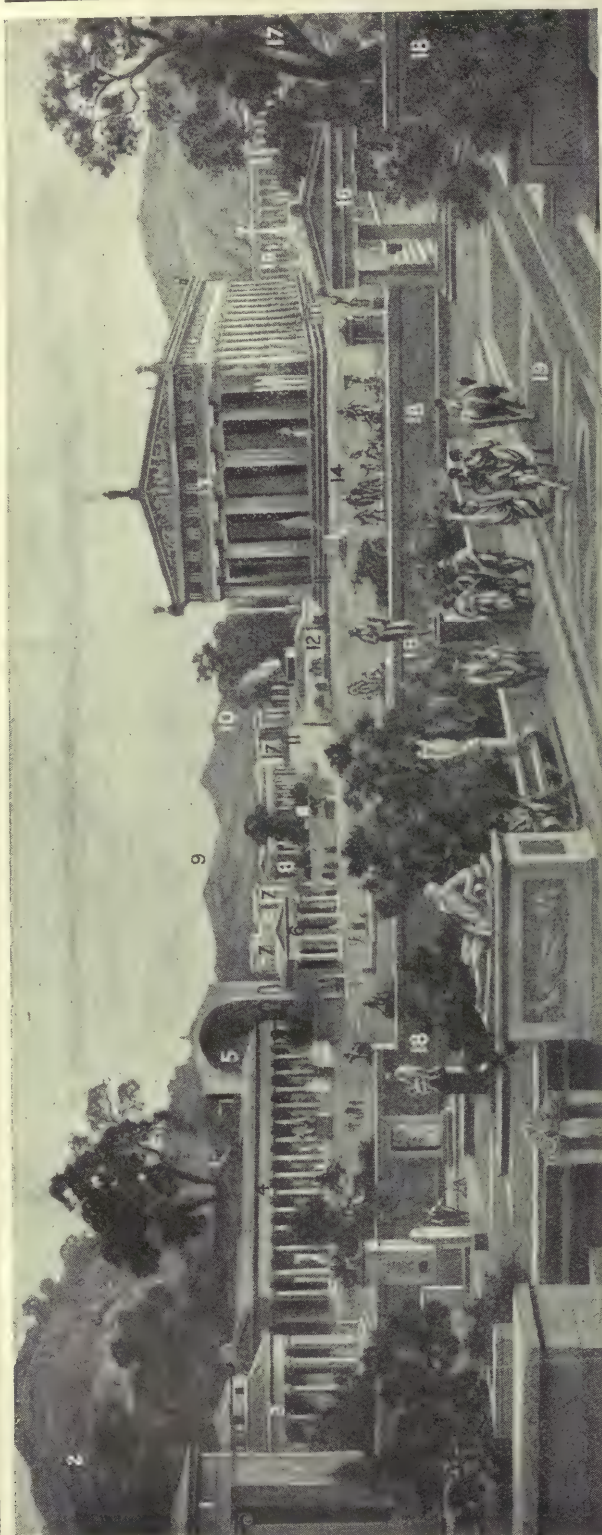
Olympic Games. In ancient Greece, a great athletic festival held at Olympia; also a modern international athletic festival. The ancient festival, which was in honour of Zeus, lasted five days, and took place every four years at the first full moon after the summer solstice. There was a record of victors from 776 B.C., but the games were regularly held long before that date. By 620 B.C. the festival had been thrown open to all free-born Greeks. It was abolished in A.D. 394. During the celebration a truce was observed by the various Greek peoples, and visitors flocked from all parts to the games.

The centre of the festival was the precinct consecrated to Zeus and known as the altis, an enclosure 750 ft. by 550 ft. Here stood a temple of Zeus containing the magnificent statue of the Olympian Zeus by Pheidias, the Heraeum or temple of Hera, and other temples, treasures in which the Greek states deposited their offerings, and the *bouleuterion*, or council chamber, for the accommodation of the presidents of the games. The site has been excavated since 1875 by German archaeologists, and among the results was the discovery of the exquisite statue of Hermes by Praxiteles. Outside the altis stood the palaestra or wrestling ground, the stadium or racing track, with accommodation for about 40,000 spectators, the hippodrome where the chariot racing took place, and the gymnasium where the competitors did their final training.

In historical times the chief were: foot races, long and short, chariot races, the *pancratium*, a combination of wrestling and boxing, and the *pentathlon*, a combination of long jumping, throwing the discus and the javelin, running, and wrestling. The prizes were wreaths of olive, but a successful competitor enjoyed free maintenance for life by his native city, or received some other tangible reward for the honour he had brought to it. (See Ladas;



R.M.S. Olympic, the White Star liner used as a troopship during the Great War, and later restored to the Trans-Atlantic passenger service



Olympia. Reconstruction of the ancient Greek sanctuary where the great games were held. 1. Palaestra or wrestling ground. 2. Hill of Cronos. 3. Philippeum, erected by Philip of Macedonia. 4. Heraeum, temple of Hera. 5. Hall of Herodes Atticus, a famous Sophist and public benefactor. 6. Pelopium, grave of Pelops. 7. Treasuries. 8. Metroum.

temple of Cybele, mother of the gods. 9. Arcadian mountains. 10. Site of the city of Pirixia. 11. Porch of Echo. 12. Great altar of Zeus. 13. Temple of Zeus. 14. Statues of Messenian boys. 15. Statue of Nike, goddess of victory. 16. Festal gate. 17. Sacred olive tree. 18. West Altis wall, enclosing sacred precincts. 19. Procession street

Ludi; consult also Greek Athletic Sports and Festivals, E. N. Gardiner, 1910.)

The Olympic Games were revived in 1900, the first meeting being held at Athens in that year. In 1904, 1908, 1912, 1920, 1924 there were meetings in Paris, London, Stockholm, Antwerp, and Paris respectively. But for the Great War the 1916 meeting would have been held at Berlin.

In 1921 the International Olympic Congress decided to abandon the Marathon race, and favoured the granting of a prize for the most outstanding event in mountain climbing. Olympic games for Central Europe only were held at Prague in June, 1921.

Olympus. Name of several mts., or mt. ranges, in ancient Greece. The best known forms the boundary between Macedonia and Thessaly, the highest peak of which reaches an alt. of 9,800 ft. On its snow-capped summit the ancient Greeks placed the home of the gods, whence Olympus came to be used as a synonym for heaven, and later for the sky. Other mts. of the same name were in Lycia and Mysia in Asia Minor, in Cyprus, and in Laconia.

Olynthus. Ancient town of Macedonia, in Chalcidice, at the head of the Toronaic Gulf, a few miles from the coast. Under Perdiccas II it became a place of considerable importance. After the Peloponnesian War it was the head of a confederacy of Greek cities, and maintained its independence until besieged and captured in 348 B.C. by Philip of Macedon, who sold its inhabitants into slavery. In its last extremity it appealed to Athens, and Demosthenes, in a series of speeches known as Olynthiacs, vainly urged his countrymen to send help.

O.M. Abbrev. for (Member of the) Order of Merit. See Merit, Order of.

Om or **ON** (Skt.). In Hindu religious literature, a solemn affirmation. The teacher begins and the pupil ends each lesson in the Veda with this word, which is equivalent to the Christian Amen (*q.v.*). Mystically, Om is regarded as symbolising the Hindu triad, Vishnu, Siva, and Brahma.

Omagh. Market town, urban dist., and county town of Tyrone, Ireland. It stands on the Strule, 129 m. from Dublin and 34 m. from Londonderry, and is a station on the G.N. of I. Rly. The chief buildings are the Roman Catholic cathedral and the Protestant church. There are remains of a castle. Linen is manufactured, and milling is another industry.

The town is said to have grown around a religious house founded before 800. The castle was besieged several times, and in 1689 the force of James II damaged the town. Market day, Sat. Pop. 4,800.

Omagua (flat-head). South American Indian tribe of Guarani stock, on the upper Ucayali river, Peru. Under Andean influence they formerly practised head-flattening. Their fabled wealth led to several 16th century expeditions. For a century they have intermingled with other tribes. In Brazil they are called Umuauas, perhaps their original name.

Omaha. City of Nebraska, U.S.A., the co. seat of Douglas co. The largest commercial and industrial city of the state, it stands on the Missouri river, about 500

1854, Omaha was chartered as a city in 1857, and from its settlement down to 1867 was the state capital. South Omaha, until then an independent city, was incorporated with Omaha in 1915. Pop. 192,000.

Omaha. Tribe of American Indians. They lived in what is now the state of Nebraska, and carried on a long and bitter war with the Sioux. The remnants of the tribe live on a reservation in Nebraska. The name means people of the upper stream.

Oman. State of Arabia. It stretches for about 1,000 m. along the coast of S.E. Arabia, being bounded on the land side by the desert. Its area is about 82,000 sq. m., and the pop. about 500,000, chiefly Arabs, but some negroes.

Much of the surface is mountainous, but in other parts the soil is fertile. The chief products are dates and other kinds of fruit. Muscat is the capital. About 1741 an Arab chief, having seized Muscat, called himself imam or ruler of Oman, and his descendants have since kept their authority. The area under their

rule has, however, varied considerably, having been especially extensive about 1800, when it included part of E. Africa. The government of India, which has a resident at Muscat, has found it necessary from time to time to interfere in the affairs of Oman, the integrity of which is guaranteed by Great Britain and France.

Oman, GULF OF. N.W. extension of the Arabian Sea. It lies between Oman, S.E. Arabia, and Makran, Persia. It leads to the N.W. through the Strait of Ormuz to the Persian Gulf, and is over 200 m. wide at its entrance.

Oman, SIR CHARLES WILLIAM CHADWICK (b. 1860). British historian. Born in India, Jan. 12, 1860, and educated at Winchester and New College, Oxford, he became a fellow of All Souls, devoting himself to historical research, especially military history. In 1891 appeared his *Warwick, the King-maker*, and in 1898 his *History of the Art of War in the Middle Ages*. His *History of the Peninsular War*, in five volumes (1902-14), cannot rival Napier in style and life, but it corrects some of the errors made by the earlier writer. Oman also wrote *Welling-*

ton's Army 1912, and popular *Histories of Greece, England, and Europe*. In 1905 he was made Chichele professor of modern history at Oxford and fellow of the British Academy. He was elected M.P. for Oxford University in 1919, and knighted in 1920.

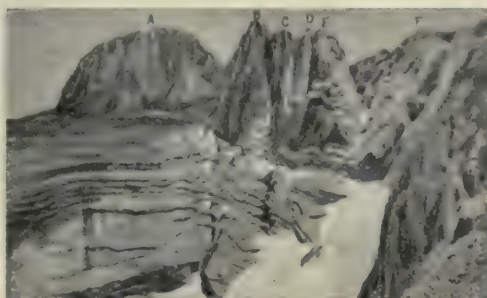
Omar (d. 644). Mahomedan caliph. One of those who was attracted to Mahomet, he became one of the leaders of the new faith. In 634 he succeeded Abu Bekr as caliph, and held that position for ten years, being murdered by a slave in 644. He carried on a warlike policy, bringing Palestine, Syria, and Egypt under his rule and crushing the Persians. He also ordered the internal affairs of the caliphate and was the first to bear the title commander of the faithful. The Mosque of Omar at Jerusalem, which he is said to have built to hold the rock from which Mahomet ascended to heaven, perpetuates his name. See Jerusalem.

Omar Khayyám, HAKIM (c. 1071-1123). Persian poet, astronomer, and mathematician. Born at Nishapur, Khorassan, he is said to have studied under the imam Mowaffak with Hassan-al-Sabbah, later founder of the secret sect of Assassins (*q.v.*), and Nizam-al-Mulk, who became vizier of Malik Shah. Omar helped to revise the Persian calendar, compiled astronomical tables, and wrote on mathematics. In Europe, he was chiefly known as author of a work on algebra until attention was drawn to his value as a poet by the rendering into English, by Edward FitzGerald (*q.v.*), of part of his *Rubáiyát* (*q.v.*) or quatrains. These have been variously interpreted as praise of love and wine and of making the best of the present world, because it is the human all-in-all, and as a Sufite allegory in which wine is an emblem of God. As rendered by FitzGerald, the *Rubáiyát* is frankly an expression of hedonism touched with a certain melancholy that attunes with western as well as eastern pessimism.

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Sir C. W. Oman,
British historian
Russell



Olympus. Highest peaks of the mountain famous in the history of ancient Greece, with their modern names. A. Throne of Zeus. B. Peak Venizelos. C. Cock's Comb. D. Virgin. E. Tarpeian Rock. F. Black Peak

m. N.W. of St. Louis, and is served by the Chicago, Milwaukee and St. Paul and other rlys., of four of which it is the terminus. The city is built on a plateau, the commercial portion lying below the residential quarter, close to the river, which is here spanned by three bridges communicating with Council Bluffs. Among notable buildings are the city hall, the U.S. government building, two cathedrals, a public library, a convention hall and auditorium, and several imposing business blocks. It is the seat of Omaha and Creighton universities, and has two medical colleges.

Omaha has upwards of 1,000 acres of parks, and the military headquarters of the Department of the Missouri, which cover 80 acres of ground and include large barracks. The Union Pacific Rly. has extensive workshops, and here, also, is one of the best equipped plants in the world for the smelting of gold, silver, copper, lead, and zinc. Other industries are meat-packing and the manufacture of motor-vehicles, flour, boots and shoes, clothing, white lead, machinery, and boilers. Settled in

Omar Khayyám Club. English club. It was founded, out of enthusiasm for Edward Fitzgerald's translation or paraphrase of the Rubáiyát of Omar Khayyám, in 1892, when three friends, Frederic Hudson, George Whale, and Clement King Shorter—two of them lawyers and the third a journalist—brought it into existence at Paganí's Restaurant, London. Among the first members were Edward Clodd, Justin Huntly McCarthy, Sir Henry Norman, Sir William Watson, and Arthur Hacker, who designed the first menu card. During the intervening years the club has entertained many statesmen, ambassadors, and men of letters at its board.

Ombre. Card game somewhat resembling the solo call in solo whist, very popular at the end of the 18th century. It is of Spanish origin, the name Ombre signifying the Man. Ombre is played by three persons with a pack of 40 cards, the 8, 9, and 10 of each suit being thrown out. The peculiarity of the game is that the same cards have different values when forming the trump suit; and that certain black cards are trumps even when the trump suit is a red one, thus: *When not trumps.* Red suits: King, queen, knave, ace, 2, 3, 4, 5, 6, and 7. Black suits: King, queen, knave, 7, 6, 5, 4, 3 and 2. *When trumps.* Red suits: Ace of spades (called *spadille*, always the highest trump card whatever the suit), 7 (of hearts or diamonds, called *manille*), ace of clubs (*basto*), ace (of either red suit, whichever is trumps, termed *ponto*), king, queen, knave, 2, 3, 4, 5, and 6 of the trump suit. Black suits: Ace of spades (*spadille*), 2 (of clubs or spades, whichever is trumps, *manille*), ace of clubs (*basto*), king, queen, knave, 7, 6, 5, 4, and 3 of the trump suit. There is no *ponto* in black trumps.

The cards are thrown round, the first black ace to fall indicating the dealer. After being reunited and shuffled, they are dealt from right to left, nine cards to each player, given three at a time, the remainder forming the stock or *talon*. The player on the dealer's right is the ombre, who plays against the combined efforts of the other two, as in three-handed solo. The ombre has the naming of the trump suit and also the privilege of changing any of his cards for those in the *talon*. If he is satisfied with his cards, and thinks he can make the majority of the tricks, he says "I play." The player on his right has the chance of calling over him and becoming the ombre if he decides to play from his origi-

nal hand (termed *sans prendre*); or should he pass, the third can do so. If the ombre discards, the other players have the same privilege. Play is from right to left, and tricks are made as in a solo call. The ombre must make more tricks than either of his opponents, otherwise he loses (termed *codille*), and pays the one who has made more tricks than he. Should the ombre win, he receives from the other players; if he makes all the nine tricks, he scores a *vole*, and is paid a larger stake. If all the players are dissatisfied with their hands, they pass, and the cards are thrown in for a fresh deal. See Solo Whist.

Omdurman. City of the Anglo-Egyptian Sudan. Situated on the left bank of the Nile, facing Khartum, and stretching for 7 m. along the river, it is the headquarters of the chief native traders of the Sudan, and an important native mart. As the resting place for pilgrims from the Western Sudan on their way to Mecca it was venerated by the Mahomedan tribes of North-Central Africa.

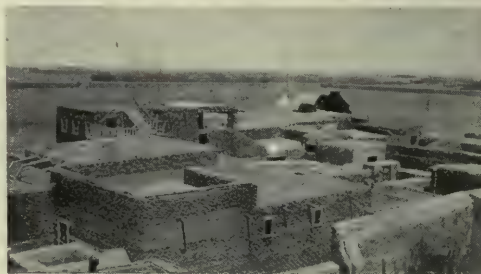
During the regime of the Mahdi (*q.v.*) it became the capital of his empire and the chief rallying place for his forces. The ruins of his tomb are in the centre of the city. Pop. 70,000.

Omdurman, BATTLE OF. Fought between the British and Egyptians and the forces of the Khalifa, Sept. 2, 1898. After his victory at the Atbara, Kitchener prepared for a further advance along the Nile, and in Aug., his force having been strengthened, he set out for Khartum. His own army, consisting of two British and four Egyptian brigades with attendant artillery and cavalry, marched along the west bank of the river; on the east marched a body of Arab irregulars, and in the Nile itself were the gunboats. Altogether he had 26,000 men.

On Sept. 1 the gunboats were able to shell Omdurman, and that night Kitchener's force encamped in a zareba with the Nile behind them, about 4 m. from Omdurman. In the early morning the battle began with a dervish attack, easily repulsed. The British, anxious to seize Omdurman before the enemy could return to it, began to march forward, but danger threatened them from forces hidden in and behind the hills to right

and left. One body was charged by the 21st Lancers, who lost heavily in the engagement, while the brigade under Hector MacDonald, that was in the rear, was assailed from both sides, one attack being delivered by 15,000 picked men. For a moment or two the danger was real, but the other brigades were able to assist and the enemy was beaten off. Omdurman was soon entered. The British and Egyptians lost about 500; the dervish loss was estimated at 10,000, in addition to 5,000 prisoners. See Atbara; Egypt; Kitchener; consult also The River War, 2 vols., W. L. S. Churchill, 1899; Famous Modern Battles, A. W. Atteridge, 1911.

Omelette. Dish made with eggs beaten up, seasoned with salt and



Omdurman, Sudan. House of the Khalifa Abdullah el Taashi

pepper, or sugar in the case of a sweet omelette, and mixed with herbs, chopped kidneys, bacon, tomatoes, cheese, etc. A piece of butter is put in the pan, and when melted the mixture is added, stirred with a fork, cooked quickly, and served very hot. The French word *omelette*, is a corruption of *la lamelle*, from Lat. *lamella*, little plate.

Omen (Early Lat. *osmen*, probably from *audire*, to hear). Phenomenon observed as a means of divination (*q.v.*). The practice of observing omens is very widely spread, and was elaborated into systems by the Babylonians, Greeks, Etruscans, and Romans. Among the omens observed by the Romans were lightning, the flight and feeding of birds, and the meeting with various animals. Omens were interpreted by the augurs and haruspices, and were especially looked for at sacrifices, *e.g.* by inspection of the entrails of the victim, and from chance utterances of the bystanders, who were enjoined to speak no ill-omened words. Words of ill-omen might be countered by a ready retort. See Augur; Shamanism.

Omentum. Fold of the peritoneum which connects the stomach with another of the internal organs.

Omeo. Dist. and town of Victoria, Australia. The town is 83 m. by road almost due N. from Bairnsdale, on the Gippsland Rly. Gold-mining and agriculture are carried on. It is a tourist centre for the Australian Alps, S. of Mt. Tambo, on the road from the S.E. coast through Bright to the Murray at Albury. Pop., dist., 3,000; town, 350.

Omniads, OMMAYADS, OR OMAYYADS. Dynasty of Caliphs. Founded by Moawiya (c. 610-80), with the capital at Damascus, the dynasty lasted until 750, when it

hire at stated times over a regular route, and to take up or set them down as required. The word is in popular speech shortened to 'bus.

The first attempt to run an omnibus service was made in Paris in 1662, when Louis XIV established a line of vehicles. Soon after the appearance of a larger type of omnibus in the Paris streets, still larger vehicles, carrying 22 inside passengers and drawn by three horses abreast, were introduced into London on July 4, 1829, by a coach proprietor named Shillibeer. Later, two-horsed types gave accommodation for outside passengers, the roof being reached by a ladder from the conductor's step. A narrow seat, called the knife-board, ran lengthwise along the centre of the roof, and the passengers sat back to back. These early omnibuses were provided with a door at the back as a protection



Onager. Specimens of the Asiatic race of wild ass
Gambler Bolton, F.Z.S.

removed, and the conductor's narrow step developed into a covered platform, while the step ladder was replaced by a winding stairway. Fuller development of the 'bus came with the advent of the internal combustion motor, and though steam omnibuses had some success, they were abandoned for petrol-driven vehicles. See Omnibuses and Cabs, H. C. Moore, 1902.

Omphacite. In petrology, name given to a pale green variety of pyroxene (q.v.). See Eclogite.

Omphalē. In Greek legend, wife of Tmolus, a Lydian king, whose kingdom she ruled after his death. When Hercules was condemned to a period of slavery as a punishment for the murder of Iphitus, Omphalē bought him, and the hero and the queen became deeply enamoured of each other.

Omsk. Town of Siberia. It is in the prov., and 265 m. N.E., of Akmolinsk, situated at the junction of the Om and Irtysh, and on the Trans-Siberian rly. There are military, academical, agricultural, and other institutions. Pop. 135,000.

Onager. Local race of wild ass occurring on the steppes of Central and W. Asia. It differs from the



was replaced by that of the Abbassides (q.v.). The last of the Omniads, Abd-ur-Rahman I, made his way to Spain and founded another Omniad dynasty at Córdoba, which existed until 1031, when it ended with Hisham III.

Omnibus (Lat., for all). Four-wheeled public conveyance. They are licensed to carry passengers for



Omnibus. The old knife-board 'bus as depicted in Punch by John Leech and, top left, by Charles Keene

against the weather, and also with straw for the muddy boots of passengers. Later on the door was



Omnibus. Types of motor vehicles introduced on the streets of London in 1921. Left, single decker with 28 seats; right, 8 type, to carry 87 passengers

By courtesy of London General Omnibus Co.

kiang and the African wild asses in its smaller size, sandy-coloured hair, shorter legs, and narrower ears. It has a black stripe down the centre of the back, and occasionally it is striped on the shoulders and legs. *See Ass.*

Onagraceae. Natural order, chiefly of herbs, mostly natives of the temperate regions. They have regular flowers, consisting of a two or four-lobed calyx and two or four petals. The fruits are seed-capsules or berries, the latter as a rule being edible. Well-known genera are fuchsia, evening primrose (*Oenothera*), and willow-herb (*Epilobium*). They are of little economic importance.

Oncidium. Extensive genus of epiphytes of the natural order Orchidaceae, natives of tropical America and the West Indies. With a few exceptions, they have pseudobulbs from which the leaves proceed. As a rule the flowers are large and showy, borne in sprays or clustered in spikes, but a few have solitary, long-stalked flowers.

Onega. River of Russia. Rising in Lake Lacha, it flows N.E. and then N.W. into the Gulf of Onega. In length about 245 m., it runs parallel with Lake Onega, about 200 m. to the E. There are also a town and a gulf of this name. The town, in the govt. of Archangel, stands at the mouth of the river, and the gulf is an arm of the White Sea, with a length of 80 m.

Onega. Lake of N.W. Russia, the second largest in Europe. It is in the govt. of Olonets, between the White Sea and Lake Ladoga, with which it communicates by means of the Svir. Its length is 145 m. and average breadth 40 m. It contains numerous islands and an abundance of fish, and is connected by the Vytegra with the Mariinskaya canal-system, and the Onega canal has been constructed along its S. shore to avoid the difficulties of navigation. In June-Aug., 1919, fighting took place around it between the Allies and the Bolsheviks. *See Murman Expedition.*

Onehunga. Town and port of North Island, New Zealand. On Manukau Harbour, it is the W. outlet for Auckland, 7 m. away. It is proposed to join the two ports by a canal. Woollen mills, shipping, and the export of timber and farm produce are its important industries. Pop. 5,900.

Oneida. Lake of New York, U.S.A. It lies about 12 m. N. of Syracuse, and is 24 m. long and 5 m. broad. The Oneida river drains it to the Oswego river, a feeder of Lake Ontario. Sylvan Beach, on the E. side of the lake, is a favourite holiday resort.

Oneida. City of New York, U.S.A., in Madison co. It stands on Oneida Creek, 26 m. E. of Syracuse, and is served by the New York, Ontario, and Western, and the New York Central rlys. It contains a high school, and has canneries, iron-works, carriage, wagon, furniture, and cigar factories, and flour mills. Oneida was settled in 1834, incorporated in 1848, and chartered as a city in 1901. Pop. 10,500.

Oneida Community. Communist society originally founded in Vermont, U.S.A., by John Humphrey Noyes, and restarted at Oneida, Madison co., New York, 1847. It has a religious basis, Noyes alleging N.T. authority for the doctrine that selflessness could be attained by holding all things in common. Even marriage was not a permanent relation in the community, but Noyes expressly disclaimed free love doctrines. Government was carried on by means of a system of mutual criticism. In deference to outside opinion the Oneida theory of marriage was given up in 1879, the community was dissolved, and in 1881 it was reorganized as a cooperative limited company. *See The Berean*, J. H. Noyes, 1847; *The Oneida Community*, A. Eastlake, 1900; *American Communities and Co-operative Colonies*, W. A. Hinds, 1908.

O'Neill, EUGENE GLADSTONE (b. 1888). American playwright. Born in New York, Oct. 16, 1888,



he was educated at Princeton and Harvard universities, engaged in business in the U.S.A. and S. America, and spent two years at sea, an experience which provided much material for his dramatic work. He became known as a promising dramatist by his one-act play, *Thirst*, 1914. His other works include *In the Zone*, 1918, produced at the Everyman Theatre, London, 1921; *The Moon of the Caribbees*, 1919; *Beyond the Horizon*, 1919.

O'Neill, SHANE (c. 1530-67). Irish chieftain. Son of Con O'Neill, 1st earl of Tyrone (c. 1484-c. 1559), he was excluded from the succession by his father in favour of Matthew, his brother, possibly illegitimate, whom he murdered in 1558. He resisted the government of the earl of Sussex, but was recognized by Elizabeth as heir to Tyrone, visiting London in 1562. His remaining years were spent in fierce wars and harryings

in the N., chiefly against the Scots settlers in Antrim and the O'Donnells. With a traitor's price on his head, he was murdered, June 2, 1567, by the MacDonnells, whom he defeated at Ballycastle in 1565.

Onesimus. Christian convert. He was a slave who ran away from Philemon at Colossae and made his way to Rome. There he met S. Paul, who converted him to Christianity and sent him back to his master with a letter, the Epistle to Philemon (*q.v.*), and also mentioned him when writing to the church at Colossae.

One-Step. American dance, popular also in England, where it was introduced about 1910, and in France. In the U.S.A. it is also known as the Castle Walk, after the dancing-master who invented it. It is virtually a running walk, performed to rag-time music. *See Dancing.*

One Thousand Guineas. Second of the five classic English horse-races. It is for three-year-old fillies, and is run annually at Newmarket over the Rowley mile on the Friday of the first spring meeting. The race was founded in 1814. *See Horse-racing.*

Ongar. Market town of Essex, England. In full Chipping Ongar, it is on the Roding, 23 m. from London, with a station on the G.E. Rly. There was a castle here in the Middle Ages, and of it a few traces remain. High Ongar is a village near. Market day, Sat. Pop. 1,400.

Onion (*Allium*). Hardy bulbous plant of the natural order Liliaceae. The plants are perennial, though onions and leeks for edible purposes are raised annually from seed. Native of Asia, *A. cepa* is the parent species of the garden onion, and has been cultivated for ages.

The onion requires a light, loamy soil, richly manured. The seed should be sown in rows about 12 ins. apart early in spring, covered only lightly, and the surface of the soil beaten down hard and firmly.



Onion. Varieties in common use. 1. Long-keeping. 2. White Spanish. 3. Giant Rocca. 4. Blood red

By courtesy of Sutton & Sons

As soon as the young plants show themselves, the top-soil should be dressed with a dusting of soot and nitrate of soda, and the onions should be thinned out to about 6 ins. apart, the thinnings being useful for salads. At the end of the summer the ripened onions should be lifted from the ground and hung in a shed, or spread on a dry floor. Care must be taken not to allow damp to reach them. Successional sowings may be made at any time up till Aug. in order to provide for fresh winter crops.

Of the onions grown outside the British Isles, the Tripoli, Madeira, and Brittany varieties are the most popular in Britain. They are more delicate in flavour and less coarse of texture than the better known Spanish onion. The usual method of propagating onions is by seed from the top growth of bulbs which are left in the ground to ripen, and of which 10 lb. to the acre should result in a crop of 35-40 tons.

Only Way, THE. Romantic drama founded by Freeman Wills and Frederick Langbridge on Dickens's *A Tale of Two Cities* (q.v.). Produced Feb. 16, 1899, at the Lyceum Theatre, London, it had a run of 167 continuous performances. The play laid the foundation of Martin Harvey's success as a popular romantic actor. See Harvey, Sir John Martin.

Onomacritus (c. 520-485 B.C.). Athenian mystic and poet. He lived in the time of Peisistratus and his sons, and is said to have collected and arranged the prophecies of Musaeus. Having been detected introducing additions of his own, he was banished. Becoming reconciled to the Peisistratidae, who had been driven out of Athens, he accompanied them to Susa, and by his prophecies of success persuaded Xerxes to attack Greece and restore the Peisistratidae.

Onomatopoeia (Gr. *onoma*, name; *poiein*, to make). Philological term for the formation of words in imitation of external sounds, whether uttered by living creatures or produced by inanimate objects. Instances are bang, bow-wow, buzz, cuckoo, frou-frou, mew, puff, quack, whir, in which the sound is an echo to the sense (hence the term *echoism*). Older etymologists regarded this method as one of the chief factors in word-formation in the earliest stages of a language, but it is now generally recognized that its influence can only have been of limited extent. See Philology; Phonetics.

Onomichi. Town of Japan, in Honshu. It is a shipping centre on the coast of the Inland Sea, 191 m. by rly. from Shimonoeki, on

the route to Kobe. The town lies along a narrow coast strip, backed by a high hill opposite the island of Mukai, which protects the harbour. There are 48 Buddhist temples, of which the finest is Senko-ji. Matting, both plain and figured, and saké are the chief articles of trade. Steamers connect the town with Tadotsu, on Shikoku. Pop. 30,400.

Onslow. Village of Surrey, England. Near Guildford, it was part of the estate of the earl of Onslow, having been once included in a chase made by Henry II. A garden city, begun here in 1920, covers about a sq. m., and is supplied with gas and water from Guildford.

Onslow, EARL OF. British title borne since 1801 by the family of Onslow. This goes back to a certain



4th Earl of Onslow,
British politician
La Fayette

Roger, lord of Oudestowe, Shropshire. His descendant, Richard Onslow (1528-71), was Speaker of the House of Commons in Elizabeth's time. A later Richard (1601-64) was a supporter of the Commonwealth. He was knighted, served in the Long and Protectorate Parliaments and in the army, and sat in the House of Lords called by Cromwell. His son, Sir Arthur (1621-83), became a baronet, and the latter's son, Sir Richard (1654-1717), was chosen Speaker, as was his nephew, Arthur (1691-1768), who filled that position from 1728-61. Sir Richard was made Baron Onslow in 1716, and the 4th baron, an official of the royal household, was made earl of Onslow in 1801. William, the 4th earl (1853-1911), was a Conservative politician. He held a succession of minor offices before and after being governor-general of New Zealand, 1889-92. From 1903-5 he was president of the board of agriculture, and from 1905-10 deputy-speaker of the House of Lords. The earl's seat is Clandon Park, Guildford, and his eldest son is called Viscount Cranley. Richard, the 5th earl, was parliamentary secretary to the ministry of health 1921-3, and under-secretary for war from Nov. 1924.

Onslow Bay. Broad bay on the S.E. coast of North Carolina, U.S.A. It extends W. from Cape Lookout, and receives the New, White Oak, Newport, and other rivers.

Ontake. Mt. peak in the Japanese Alps. The most frequented sacred mountain after Fujiyama, its alt. is 11,000 ft., and the summit

is marked by a Shinto shrine dating from 1385. Every summer crowds of pilgrims make the ascent, which, like that of Fuji, is divided into 10 stages. A sulphur crater and mountain tarns occur near the summit, which resembles that of Fuji in shape.

Ontario. Smallest and most easterly of the five Great Lakes of N. America. Its length is 193 m., width 53 m. at the broadest part, area 7,260 sq. m., maximum depth 738 ft., and average depth 412 ft. With a surface 246 ft. above sea level, it occupies a shallow depression in the earth's crust. It is fed by the Niagara river from Lake Erie, and is known at its N.E. outlet to the St. Lawrence as the Lake of a Thousand Isles. The chief feeders are the Genesee, Oswego, Black, and Trent rivers. An important section of the St. Lawrence and Great Lakes navigation, the lake is connected with Lake Erie by the Welland Canal, with the Ottawa river by the Rideau Canal, and with the New York State barge canal system by the Oswego Canal; shore ice interferes with navigation in the winter.

Called Lake St. Louis by Champlain, the lake was known to the French settlers in Canada as *Lake Frontenac*. See Canada, Great Lakes.

Ontario. Prov. of Canada, the most populous of the nine. Also called Upper Canada, its area is



Ontario arms

407,262 sq. m., of which 41,382 are covered with water, and its population in 1921 after the prov. was enlarged reached the total of 2,922,000. The province consists of two parts, an older, smaller, and more settled one, the Lakes Peninsula, which is something like a triangle between Lake Huron, the Ottawa river, and, on the third side, Lakes Erie and Ontario, and a newer part to the N. A section of this, the dist. called Patricia, was only added to Ontario in 1912. Toronto is the provincial capital.

The climate is varied, as may be expected in a district 1,075 m. from N. to S., and stretching from Detroit on the U.S. border to the shores of Hudson Bay. In the S. it is mild in winter, and not too hot in summer, owing to the lakes; in the N. it reaches a region of intense cold. It includes parts of four of the Great Lakes, and there are many sheets of water in the N. part. The prov. is largely flat, although the Laurentian Highlands run through it. The rivers mostly



the bond held, and in 1867 it formed the basis of the new Federation. Upper Canada then took the name of Ontario. **Ontology** (Gr. *logos*, theory; *ontos*, of that which is). The science of being as being, the investigation of its properties and relations, and of the ultimate principle of the physical and intellectual world. It is sometimes used as synonymous with metaphysics, of which,



Ontario or Upper Canada. Map of the most populous province of Canada, lying between Hudson Bay and the Great Lakes

fall into Hudson Bay, but some join the Ottawa and others run into the Great Lakes.

Ontario was peopled largely by loyalists who left the U.S.A. after the War of Independence, and loyalty to the Empire has always been strong. The chief industry is agriculture, about 14,000,000 acres being under cultivation. Wheat, barley, and oats are grown in great quantities; milk, butter, and cheese are produced; cattle, sheep, and poultry are reared. Tobacco and fruit are also grown, especially in the Lakes Peninsula. The prov. produces a greater value of minerals than any other part of Canada. The chief are silver, nickel, and copper, while gold, petroleum, and iron are also found. Extensive fisheries exist in the lakes and rivers, and much lumber is cut. Transport is served by a network of rlys., rivers, and canals, and Niagara and other falls provide the industries with an abundant supply of electric power.

Ontario sends 82 members to the House of Commons at Ottawa. Local government, including the control of education and the raising of a certain revenue, is managed by a cabinet, responsible to a legislature—one chamber of 111 members. A lieutenant-governor represents the crown. The chief religious denominations are the Methodists, Presbyterians, Anglicans, and R.C.

Religious rivalry has always been rather keen, owing partly to the public lands acquired by the Church of England in 1791, and to the demands of the Roman Catholics for separate schools. In 1854 the clergy reserves were secularised, and in 1863 the Roman Catholics obtained their schools.

Before 1782, when land in Ontario was given to the loyalists from the U.S.A., the white population comprised only a few hunters. Kingston was then founded, and for a few years the country was administered from Quebec. In 1791 Upper Canada was made a separate province, and its affairs controlled for some time by a small group called the family compact. In 1837 there was a rebellion against the existing order, and in 1841 the two Canadas were united. In spite of the troubles

however, it is in reality a part. The ontological proof of the existence of God concludes, from the conception which we ourselves have of an infinitely perfect being, that such a being must necessarily exist. *See* Metaphysics.

Onus (Lat., burden). Legal term generally used in the phrase *onus probandi*, burden of proof. The rule is that he who affirms must prove; and in the course of a case the *onus* of proof often shifts from one party to another. Thus in an action for libel, with a defence denying publication and pleading that the libel is true, first the *onus* is on the plaintiff to prove that the defendant published the words complained of, and that they are defamatory of him, the plaintiff. Then the *onus* shifts to the defendant; and it is for him to prove that the words are true.

Onychia (Gr., *onyx*, finger-nail). Inflammation of the bed of the nail. It may be due to direct infection, or may develop in the course of diseases of the skin such as eczema and psoriasis.

Onyx. General term applied to riband agates characterised by well-defined alternate rings of pure milk-white with bands of other colours. If the tint of the secondary rings is flesh colour, the agate is known as chalcedony-onyx; if red, carnelian-onyx; if green, sardonyx. All these are utilised for intaglios (incised) and cameos (relief) carving for jewelry.

Onyx opal is a natural stone built up of alternate layers of precious and common opal. Onyx marble, from Mexico, and onyx alabaster, from Egypt, are handsome forms of stalactite marble, mostly calcite. They are sometimes used for ornamental purposes. See Gem.

Oodnadatta. Township in South Australia. It is 688 m. from Adelaide and since 1891 has been the railroad of the transcontinental rly. to Darwin, 1,350 m. distant in Northern Territory. Mount Brassey, 500 m. distant in the Macdonell Ranges, is reached from Oodnadatta by camel transport, by which means its mica produce is brought to railroad for export.

Oolite (Gr., *ōōn*, egg; *lithos*, stone). In geology, name given to the upper and middle division of the Jurassic rocks. During this period of geological time the continents of Europe and Asia were covered to a large extent by the ocean, and the Oolite deposits are chiefly limestones formed by the fossil remains of marine animals. The Jura mountains of Switzerland are typical examples.

Great Oolite is the name given to rocks of the Oolite System, and sometimes called Bath Oolite from their typical occurrence at Bath. Great Oolite rocks are found in Wiltshire, Somersetshire, Gloucestershire, etc., and provide the well-known building stones, Bath stone, Stonesfield slate, etc. They contain a number of fossils of dinosaurs, pterosaurs, etc.

Inferior Oolite is named from its occurrence in strata beneath the Great Oolite. The rocks, found in various parts of Great Britain, are limestones, calcareous sandstones, ironstones, slates, etc., and contain many valuable coal seams. The Collyweston slates are famous roofing slates, and many of the Inferior Oolite rocks make excellent building stones. The rocks contain a large number of fossils, including cycads, and conifers. See Jurassic System. *Pron.* o-olite.

Oology (Gr. *ōōn*, egg). Branch of ornithology which deals with the eggs of birds. All birds' eggs are alike in the general arrangement of their contents and in the chalky nature of the shell; but differ widely in size, colour, and shape. The largest known egg is that of the extinct *Aepyornis* of Madagascar, which contained about two gallons, while the smallest are those of certain humming birds. See Bird; Egg, colour plate; Embryology. *Pron.* o-ology.

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Oosterhout. Town of the Netherlands, in the prov. of N. Brabant. It lies 5 m. N.E. of Breda, with which it has tramway connexion. Situated in flat agricultural country, it has a considerable trade in local produce, and industries in tiles, pottery, sugar-refining, and tanning. Pop. 12,000.

Ootacamund. Hill station of Madras Presidency, India, in Nilgiris dist. It is the finest hill station in India, being over 7,000 ft. in alt., and having a temperate climate, with night frosts in Dec. and Jan. Around the station, where eucalyptus and wattle grow in profusion, are the open, rolling downs of the Nilgiri Hills, the home of the Ootacamund Hunt. Here the Madras Government sits during the hot season; the government offices on Stonehouse Hill date from 1821, and Government House from 1876. The station is reached by a branch line from Podanur. Pop. 18,800.

Ooze. Name given to the deposits of calcareous mud on the ocean bed at great depths, composed mainly of the external skeletons of minute Protozoa. These deposits through vast ages have built up the chalk cliffs and hills. The animals belong largely to the order Thalamophora, better known as Foraminifera. As *Globigerina* is one of the commonest forms, the mud is often known as *Globigerina* Ooze. These minute animals swarm near the surface of the sea, and as they die their skeletons fall in a constant rain of impalpable matter to the depths.

At greater depths the ooze consists of the flinty skeletons of Radiolaria, another order of minute Protozoa. The reason is that the enormous pressure causes the water to hold in solution great quantities of carbonic acid, which dissolves the chalky skeletons of the Thal-

amophora, while the flinty skeletons of the Radiolaria are less affected. Radiolarian Ooze is usually met with beyond the 4,000 fathom line. See Foraminifera.

O.P. Abbrev. in stage directions for opposite prompt side. The O.P. (old prices) riots occurred Sept. 18-Dec. 16, 1809, when Covent Garden Theatre, London, was reopened by J. P. Kemble, with increased prices of admission. The old prices were restored after much damage had been done.

The O.P. (Old Playgoers') Club was founded in 1900, by Carl Henschell, to provide a meeting-place for regular "first-nighters," and other theatrical enthusiasts. Lectures, concerts, and dinners are given occasionally by the club, which possesses a collection of over 10,000 playbills. Its premises are in 1-4, John Street, Adelphi, W.C.

Opal. In mineralogy, a hydrous dioxide of silicon. It is amorphous or non-crystalline, contains a very variable quantity of water, and varies in colour from dark to pale yellow, red, blue, or green, the lighter colours being more common. The mineral is a secondary one, resulting from the decomposition of the primary ingredients of felspars, etc. It is often found in volcanic rocks, and the variety known as wood opal is petrified fossil wood, the structure of which is preserved while the colours are opalescent. The mineral has the power of penetrating organic remains, fossil shells, etc.

The precious opal has been from time immemorial one of the best known gems, and in ancient times it was considered to bring its wearer good fortune. It is a semi-transparent, semi-translucent stone, bluish or yellowish white in colour as a rule, and showing a wonderful play of all colours of the rainbow as the light strikes it at various angles. This play of colour is due to the tiny fissures filled with air and water.

Precious opal is found in Czechoslovakia, S. America, New South Wales, the U.S.A., etc. The opalescence is best brought out by giving the gem a rounded polished surface, and the loss of colour is due to the surface wearing, the stone being a comparatively soft one. The fire opal, a beautiful red stone, with yellow, or yellow and green reflections, is found in Mexico; as is the girasol, a bluish white opal, with red reflections. Hyalite (*q.v.*) is a glassy variety of the mineral without any opalescence, and hydrophane is another variety of porous texture which becomes transparent on immersion in water. Menilite is a variety found in

concretionary form, and is opaque grey. The common opal, which is not opalescent, occurs in a variety of colours from white to brown. See Gems, colour plate.

Opata. American Indian tribal division of Piman stock, in Sonora, Mexico. Embracing the Eudeva, Jova, and Teguima sub-tribes, they were more submissive than the Pima, and are now so thoroughly merged in the Spanish stock that in 1910 only 43 were separately enumerated. See Sonoran.

Open Door. Term used in economics as a synonym for free trade. See Free Trade; Protection.

Open Hearth Process. Method of making mild steel, due to Sir William Siemens, and frequently described as the Siemens process. It is distinguished from the Bessemer process by being carried out in a reverberatory furnace, and by the fact that the decarburization of the molten metal is effected, not by burning out the carbon by a blast

of air, but by adding fresh ore, ferric oxide, in such quantity as will, by the chemical reactions set up in the furnace, bring about the desired reduction of the carbon and the purification of the whole mass to the required degree. The ore is usually Spanish haematite, and in any case must be free from sulphur and phosphorus, and as free as possible from silica. See Bessemer Process; Metallurgy.

Open Sesame. In the story of Ali Baba in The Arabian Nights' Entertainments (*q.v.*), magic words that caused the opening of the door of the cave in which the Forty Thieves kept their plunder.

Openshaw. District on the S.E. of Manchester. A busy manufacturing area, it makes rly. rolling stock, has iron-foundries, dyeing and chemical works, cotton factories, and engineering establishments, and is traversed by the Manchester and Stockport Canal. See Manchester.

OPERA: THREE CENTURIES OF GROWTH

J. Percy Baker, Mus.B., F.R.A.M.

Supplementary to this article are articles on the great composers of opera, e.g. Gluck; Handel; Wagner. See Acting; Drama; Harmony; Music; Singing; also Covent Garden; Scala

Opera (Ital. shortened from *opera in musica*, a musical work) is a hybrid form compounded of music and drama, each of which necessarily modifies the other. The dialogue is mostly in verse and sung to orchestral accompaniment; lyrics are an important element, and a ballet is often included.

The rise of opera began about 1582, though other forms of musical drama existed before. The spirit of the Renaissance rebelled against the application of the contrapuntal music then in vogue to the emotions of the stage, and a little group of enthusiasts, who were in the habit of meeting to discuss art at the house of Giovanni Bardi, Conte di Vernio, in Florence, set themselves the task of reviving, as they thought, musical declamation as it had been used in Greek tragedy. In the hands of Claudio Monteverde, an accomplished musician and a man of original genius, opera began to be a vehicle of increased dramatic expression; but it was not until the first public opera-house was opened at Venice in 1637 that it advanced from being the pastime of princes to becoming a popular passion.

Cavalli made use of a more melodic style than was consonant with the austere tenets of the Bardi group, and thus initiated the introduction of the aria in relief to declamation or *recitativo*.

Melody was carried further by Alessandro Scarlatti, who not only established the aria as a legitimate form of expressing soliloquy, but also adopted two distinct kinds of recitative: (1) *Recitativo secco*, in which the voice was supported by simple chords filled in at the harpsichord from a figured bass, and (2) *Recitativo stromento*, the orchestral accompaniment of which was as important as that of the aria. This last, which Scarlatti used when the dramatic situation called for strong or impassioned treatment, has been enormously developed until it is now the backbone of modern opera.

Early opera in France owes much to the Italian Lulli, who possessed an extraordinary faculty of adaptation to the racial characteristics of the people among whom he passed his life. With him the instrumental part was better planned and more highly wrought, while, in addition, he obtained that justness of rhetorical expression so desiderated by the French.

German Opera

In Germany Keiser produced a large number of operas, truly German in style, at Hamburg, and really laid the foundations of that art which culminated both artistically and technically in Richard Wagner. In England the outstanding name is that of Henry Purcell, who composed in all 42 works for the stage, several of them, full

operas. As with Lulli in France, Purcell's verbal declamation was nearly always beyond reproach.

Handel's genius was so overpowering, his force of character so tremendous, that his operatic ventures in London, though financially they ruined him, overshadowed all native art. English opera, however, though obscured, was never wholly destroyed, and it managed to struggle on with a varying degree of vitality until in the last half of the 19th century it to some extent reasserted itself. In so-called "grand opera," not many British works hold the stage, despite their intrinsic merit, because of the reluctance of the British public to support native art, but in light opera the works of Sullivan still make their appeal.

Debased Forms

The aspirations of Peri and Caccini after a more perfect expression of the text, and of their successors after a more perfect expression of the dramatic action, had become lost sight of by the 18th century, in the ever-growing desire to please the public and to gratify the vanity of singers. Meretricious stage effects were over-elaborated, the different nationalities of performers often led to the use of more than one language in the course of representation, and the necessity for providing each of the singers with opportunities for personal display compelled the composer to produce a certain number of arias, all in the same *da capo* form, though they fell into one or other of five categories according to their character. The very number of the singers was immutably prescribed, viz. three women and three (or, at most, four) men, the first of the latter being an artificial soprano, the second an artificial soprano or contralto, the third a tenor, and the fourth, if any, a bass, though sometimes all the men were *castrati*. The effect on librettists and composers was inevitably lamentable, but the public loved to have it so, despite the efforts made by Handel and others to break away from them.

To Gluck we owe that reform of opera which opened the door to modern developments. The ridiculous conventions and restrictions connected with opera offended his sense of artistic fitness, and for years he patiently applied himself to study with the object of ascertaining the best method of carrying out a radical alteration. His theories first found exemplification—and justification—in Orfeo ed Euridice, produced at Vienna in 1762, in which both librettist and composer displayed

a deliberate disregard of conventional precedents. Gluck did not allow his music to interfere with legitimate stage requirements, but used it so as to accentuate and illustrate the dramatic action. Although his views met with violent opposition, their intrinsic logical truth and his own genius eventually triumphed; the old form of opera was killed. Gluck's reforms penetrated to every artistic centre.

In Italy, the birthplace of opera, this form of art has been disproportionately predominant, not altogether to the advantage of Italian music. The most prominent name is that of Verdi, whose earlier work displayed that concession to vocal effect which is peculiarly grateful to Italian audiences. Even Verdi, however, could not remain unaffected by the reforms of Wagner, mentioned below, and in such works as *Aida*, *Falstaff*, and *Otello* adopted a more modern style, truly remarkable in a man who was then already old.

Wagner revolutionized the whole scheme of opera. Although his first opera, *Rienzi*, was founded on existing models, this remarkable composer was inspired by the example of Gluck, and early in his career set himself the task of evolving a new form of stage art, in which music, poetry, and scenic effect should have equal importance. To this end he not only wrote his own libretti and invented his stage effects, but also expounded his novel theories in voluminous writings. His music, moreover, was conceived upon a hitherto unheard of scale. The storm aroused by Gluck was a mere trifle compared with that which raged around Wagner, though for that his own provocative and intolerant manner was largely to blame. It has long been recognized that the Wagnerian music dramas—his own term—are amongst the most striking, as well as the most stupendous efforts ever put forth in the realm of opera. The later developments of Richard Strauss, however interesting technically, show no artistic advance on Wagner.

Of late years the Russian School has attracted much popular support by reason of its primitive strength and its splendid presentation. Like Peri and Caccini, modern Russian composers have aimed at reproducing, with the utmost fidelity possible, the rhetorical force of the words, and thus the wheel has in a sense made a full turn, though modern requirements include the expression of emotion and dramatic significance to an

extent undreamed of three hundred years ago. At the same time it must never be forgotten that



Opéra Comique. Main entrance of the Paris theatre, one of the national theatres of France

opera cannot be wholly realistic. It is necessarily a conventional form of art, and as such it must be accepted.

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Opéra Comique. In the classification of opera, one in which the dialogue parts are spoken, not sung. The plot is generally brought to a happy conclusion, but this is not essential, an example of the

contrary being Bizet's *Carmen*. The *opéra comique* should not be confused with the English comic opera, which corresponds to *opéra bouffe*.

The Opéra Comique is one of the national theatres of France, now situated in the Place Boieldieu, Paris. Founded in 1714, it had a struggle for existence against the rivalry of the Opéra des Italiens and the Comédie Française, and was suppressed from 1718-21 and 1745-52. In 1801 it merged with the former, and occupied several buildings until the present one was opened, 1898.

A London theatre called The Opéra Comique was opened Oct. 29, 1870, for the performance of French plays. With its main entrance in the Strand, its stage backed that of The Globe (*q.v.*), in Wych Street. Remembered for its association with David James, who reconstructed it in 1885, and as the early home of the Gilbert and Sullivan operas, it disappeared when Aldwych (*q.v.*) was constructed in 1901-5.

Operating Theatre. Room specially designed and equipped for the performance of surgical operations. A modern operating theatre is designed so as to reduce to a minimum the opportunities for collection of dirt and dust, and to provide for easy and thorough cleaning. The walls, accordingly, should be free from all ledges or shelves, and should be lined with smooth tiles or glazed brick, or covered with an enamelled surface, so that they can be thoroughly washed down with a hose. The floor should be formed of an impermeable substance. The theatre



Operating theatre in S. Bartholomew's Hospital, showing arrangement of apparatus, with surgeons and nurses in antiseptic clothing

should be well ventilated and well lighted, and heating arrangements should permit of an equable temperature being maintained. Attached to the theatre should be a small room in which the patient can be anaesthetised before being brought into the theatre, and another room in which instruments can be kept and sterilised. *See* Surgery.

Ophelia (Gr., help). Character in Shakespeare's tragedy *Hamlet*. Beloved by Hamlet and com-



Ophelia sitting by the waterside. From the picture by R. Redgrave, R.A.

manded by her father, Polonius, to repel his advances, she goes mad after her father has been killed by Hamlet, and eventually drowns herself. *See* Hamlet.

Ophicleide (Gr. *ophis*, serpent; *kleis*, key). Brass wind instrument. It was the successor of the serpent, the bass member of the cornett group. All these instruments had a cup-shaped mouthpiece, and had lateral finger holes at distances to fit the stretch of the hand. Intonation was therefore liable to be imperfect. A new model, the ophicleide, was introduced, with keys to correct the imperfections. The ophicleide has been succeeded in the orchestra and military band by the bass tuba or bombardon, but it served a useful purpose in the earlier part of the 19th cen-



Ophicleide with keys to assist fingering

tury. It was used by Spontini in his opera *Olympia*, 1819, and Mendelssohn wrote for it in his *Midsummer Night's Dream* music, and in *Elijah*.

Ophidia (Gr. *ophis*, serpent). Scientific name for the order of reptiles of the sub-class Sauria, and better known under their common name of snakes (*q.v.*).

Ophioglossaceae. Small natural order of Pteridophyta. It has the leaves rolled lengthwise before expansion, and the spores contained in large two-valved capsules without an elastic ring. It includes the genera *Ophioglossum* (adder's tongue fern), *Botrychium* (moonwort fern), and *Helminthostachys*.

Ophir. Land famed in O.T. times for its gold, which was brought to Palestine by the ships of Solomon and Hiram, king of Tyre. Its locality has been the subject of much speculation, but S.E. Arabia is the most likely region.

Ophite. Old name for the mineral now known as serpentine (*q.v.*).

Ophites OR **NAASANI** (Gr. *ophis*, and Heb. *nahash*, serpent). Sect of serpent worshippers. They arose in Egypt in the 2nd century, existed until the 6th century, regarded the serpent that tempted Eve as the embodiment of wisdom, were antipathetic to Jews, and called themselves Gnostics, claiming that they alone understood the deep things of religion. The doctrines adopted by the various bodies of Ophites included elements of Egyptian and Assyrian symbolism, Indian mythology, Greek philosophy, and corrupt ideas of Christian history and doctrine. *See* Gnosticism.

Ophiuchus (Gr. *ophiouchos*, holding a serpent). In astronomy, equatorial constellation south of Hercules. It represented in ancient astronomy the serpent holder who is trampling on the scorpion and strangling the serpent.

Ophiuroidea (Gr. *ophis*, serpent; *oura*, tail). Class of brittle or sand stars. They are star-shaped echinoderms, having five arms, used for locomotion, extending from a flat central round disk which contains the mouth. Ophiuroidea are divided into two orders, Ophiurida and Euryalida, fossil remains being found in the Silurian and later periods of geological time.

Ophrys. Genus of British, European, Asiatic, and African herbs of the natural order Orchidaceae. The genus includes such well-known species as the bee ophrys, fly ophrys, and spider ophrys. Their flowers vary from pink to yellow and brown.

Ophthalmia. Inflammation of the conjunctiva or mucous membrane which covers the front of the eyeball, and is reflected on to the inner surface of the eyelids. *See* Conjunctivitis; Eye.

Ophthalmoscope. Instrument invented by Helmholtz, and later extensively modified. It consists



Ophthalmoscope, for examining pupil of eye

of a small mirror with a circular hole in its centre and a rotating wheel in which various types of lenses can be fixed. The patient's eye is illuminated and observed through the small hole and one of the lenses. *See* Eye.

Opie, JOHN (1761-1807) British painter. A native of St. Agnes, near Truro, he obtained the patronage of Dr. Wolcott, known as Peter Pindar, accompanied him to London in 1780, and at once achieved celebrity as the "Cornish Wonder." He became A. R. A. in 1787, R. A. in 1788, and professor of painting in 1805; and died in London April 9, 1807. His genius lay in historical paintings, in which, though his technique was always deficient, he showed extraordinary freshness and vigour. His wife Amelia (1769-1853) was a well-known writer of tales. *See* Girtin, J.; Godwin, M.



John Opie, British painter

Opimius, LUCIUS. Roman politician. Consul 121 B.C., a determined opponent of Gaius Gracchus and a supporter of the senatorial party, he led the band of senators and knights in the riot which ended in the murder of the reformer and of 3,000 of his adherents. In the following year he was impeached for having murdered Roman citizens without a trial, but was acquitted, being defended by the renegade Gaius Papirius Carbo (*q.v.*). Sent in 116 on a political mission to Africa, he was accused and convicted of having accepted bribes from Jugurtha. Sentenced to banishment, he died in poverty at Dyrrhachium.

Opium (Gr. *opos*, juice). Juice obtained by cutting into the unripe capsules of the white poppy (*Papaver somniferum*). This is solidified by evaporation, and comes into the market in the form of dark brown or black irregular

masses. Crude opium contains a number of alkaloids, of which morphine, which may be present to the extent of 12 p.c., is the most important. Others are codeine, thebaine, and narcotine. In addition, opium contains neutral substances, organic acids, water, mucilage, resin, albumen, glucose, oils, and mineral salts. Morphine extracted from opium is employed in British medicine as the hydrochloride, acetate, and tartrate.

Opium acts as an anodyne and narcotic almost entirely in virtue of the morphine it contains, and the therapeutic action of these substances may accordingly be considered together. Opium is often sprinkled over hot fomentations and poultices applied for the relief of pain, and opium liniment is similarly employed. The ointment of galls and opium is mainly employed to relieve the pain of piles and anal fissures. Morphine is a very valuable drug for the relief of pain, and is constantly used in cancer, gastric ulcer, and other conditions, for this purpose. It is very undesirable to give opium whenever the pains are of an hysterical character, owing to the danger of the opium habit being formed.

Morphine is also of great value for insomnia resulting from acute disease, but should not be given for chronic sleeplessness, for the same reason. Morphine also stops the peristaltic movements of the stomach and intestines. Hence it is of service in all inflammatory conditions of the abdomen, where it is desired to maintain the intestines in a state of rest, and it is in virtue of this property that opium tends to arrest diarrhoea. Opium may also be given with good effect in some cases of heart disease associated with much pain, and occasionally, in small doses, in affections of the lung associated with distressing cough.

Poisoning by Opium

Four grains of opium and two drachms of the tincture of opium have proved fatal, but recovery has occurred after much larger doses. The symptoms usually commence within an hour. At first there is a mild degree of excitement, with flushing of the face and quickening of the pulse; soon this is followed by headache, giddiness, and somnolence, which gradually passes into a state of stupor. In the early stages the patient can be roused, but later the coma is profound. The breathing is slow and stertorous, the lips livid, the skin cold and clammy, the pulse slow; the breathing becomes slower and slower, convulsions may occur towards the end, and ulti-

mately the patient dies from asphyxia.

The stomach should be washed out with a solution of potassium permanganate, about 10 grains to the pint. Coma should be prevented, if possible, by continual stimulation, throwing cold water in the patient's face, and walking him about. When coma has supervened, it is worse than useless to drag him about. Artificial respiration should be adopted. Oxygen may be administered if the lips are blue. Stimulants, such as strychnine, ether, etc., are helpful. A hypodermic injection of one-twentieth of a grain of atropine may be given.

Effects of the Opium Habit

The opium habit is often acquired in the first instance from the taking of opium to relieve pain. Hypodermic administration is the most frequent form. The drug is taken to produce the pleasurable excitement and feeling of well-being which is the first effect of opium. As this wears off depression follows, and the person takes more opium to relieve this. When the habit has been definitely acquired the complexion of the sufferer becomes sallow, he suffers from sleeplessness, sometimes nausea and vomiting, and emaciation gradually supervenes. He is irritable, and moral changes appear. He is untruthful, and may resort to all sorts of subterfuges to conceal his habit and obtain the drug. This condition may persist for years, and eventually signs of peripheral neuritis may appear and death follows from exhaustion.

THE OPIUM TRADE. The opium poppy, which is indigenous to W. Asia and S.E. Europe, yielded food and oil long before the 3rd century B.C., when soporific extracts were made by the Greeks. Before our era the more potent sap from the capsules came into medicinal use. The spread of Islam carried the knowledge of the plant and its properties across Asia, and it was cultivated in China by the 8th century A.D. The Mogul emperors monopolised the Indian opium manufacture, and fostered an export trade.

Tobacco reached China from Spanish America by 1620, and at first opium was mixed with pipe tobacco. Within a century the smoking of unmixed opium became so rife that in 1729 it was prohibited by Chinese imperial edict. After the ancient Indian monopoly passed to the East India Company in 1757 the cultivation and trade grew apace. Successive Chinese edicts were persistently ignored, until in 1839 the seizure of British opium stocks at Canton led to the

so-called Opium War, which ended in the cession of Hong Kong to Great Britain. Importation grew until in 1898 it reached 95,000 piculs of 133 lb. Local cultivation then spread swiftly over China and Manchuria.

In 1891 the British parliament adopted a resolution condemning the Indian cultivation and traffic. The poppy was being grown in Bengal, Agra, and Oudh, this "Bengal opium" being manufactured in government factories at Patna and Ghazipur. "Malwa opium" was produced in several native states in Rajputana and central India. But high duties tended to discourage the traffic. In 1893-95 a royal commission sat, and recommended stricter supervision of the traffic. By 1906, when China was producing 376,000 piculs, her government promulgated an edict requiring the cultivation and use to cease throughout the empire within ten years. Great Britain undertook to reduce the export to China by annual tenths so long as local cultivation diminished *pari passu*. In 1908 the Hong Kong opium dens were closed. An international commission, sitting at Shanghai in 1909, resolved to assist China to secure her ends, and on March 31, 1917, the importation of Indian opium ceased.

The effects of opium-smoking, due to morphine in a minor degree only, differ from those of opium-eating, which is practised in Asia Minor, Persia, and India. Asia Minor is still an important source of opium for medicinal uses, this "Turkey opium" trade being centred in Constantinople and Smyrna. Good qualities have been produced in Egypt and the Balkan states, and from early Islamic times Persia has been an active source of supply.

In 1918-19 the revenue from Bengal opium, including that consumed in India, was £3,289,000, and 13,768 chests were exported. The area under poppy cultivation, in 1888 600,000 acres, was by 1915 reduced to less than one-third. See Poppy; consult also The Commercial Products of India, Sir G. Watt, 1908; On the Trail of the Opium Poppy, Sir A. Hosie, 1914.

Opon. Town on Mactán I., Cebú, Philippine Islands. It lies opposite Cebú city. Magellan was killed here by the natives in 1521. The cultivation of maguey is the chief occupation. Pop. 22,250.

Oporto (Lat. *Portus Cale*; Port. *O porto*, i.e. the port). Second largest city of Portugal, capital of Porto dist. It stands on the N. bank of the Douro, 3½ m. from the Atlantic, and 209 m. by rly. N. of



Oporto, Portugal. 1. Ribeira quay and iron bridge of Dom Luiz I. 2. Rua 31 Janeiro, one of the principal shopping streets. 3. Praça de Libertad and statue of Pedro IV in front of the city hall. 4. Tower of the Clerigos church

Lisbon. It is built in a succession of tiers on a hill slope, and lines the river for about 2 m. A striking

feature is its two fine bridges; one carries the rly.; the other has two roadways; the upper one is 203 ft. above the water, with its arch, one of the largest in Europe,



Oporto arms

Gaudily painted houses give the city an Oriental appearance. The cathedral was built on the site of a Visigothic citadel dating from the 12th century. Other buildings include an episcopal palace, many old churches, museums, opera house, bull ring, mint, and university. The Torre dos Clerigos, or Tower of the Clergy, is 246 ft. high.

The centre of the port wine trade and a busy manufacturing town, Oporto rivals Lisbon, calling itself the capital of the North. Apart from the shipping, mostly carried on from its harbour of Leixões (*q.v.*), its chief industries are the spinning and weaving of cotton, wool, and silk, sugar refining, distilling, and tanning, and the manufacture of pottery, hats, gloves, tobacco, paper, and articles of luxury. Wine barrels, etc., are made at the S. suburb of Villa

Nova de Gaia, across the river, where are warehouses for the storage of wine, grain elevators, convents, and villas. Fishing is extensively carried on.

The Alani, who conquered the district in the 5th century, called their new town on the N. bank of the Douro, Castrum Novum. The Visigoths took it about 540, the Moors captured it in 716, and the Christians in 997, when it became the capital of the counts of Portucale. Its commerce greatly increased after the earthquake at Lisbon in 1755. It was occupied by the French in 1808-9, was besieged by Dom Miguel, 1832-33, and in 1847 was held by revolutionaries. Pop. 194 000



Opossum. Specimen of the Azaras opossum, the American marsupial
W. S. Burridge, F.R.S.

Opossum (*Didelphys*). Marsupial mammal. The family to which it belongs is found only in America, though fossil remains occur widely distributed throughout the world. Opossums are all of small size, nocturnal in habit, carnivorous and insectivorous, and with very few exceptions make their home in the trees. Most of them have long prehensile tails, but many lack the pouch characteristic of marsupials. In Australia the name opossum is given to the phalanger (*q.v.*). See Marsupials.

Oppau. Industrial village of Baden, Germany. It is situated 3 m. N. of Ludwigshafen, near the left bank of the Rhine. The main industry is the manufacture of artificial nitrogen at the works known as the Badische Anilin und Soda-fabrik. During the Great War the output of nitrogen was increased more than tenfold, and work was afterwards maintained on almost the same scale; poison gases and high explosives were also produced. The works were repeatedly bombed by Allied airmen. In Sept., 1921, an explosion wrecked the village, caused the loss of about 400 lives, and damaged Mannheim and other neighbouring towns.

Oppeln. Town of Silesia. It stands on the right bank of the Oder, 51 m. S.E. of Breslau. The church of S. Adalbert, founded 995,

is said to be the oldest church in Upper Silesia. There are a seminary for teachers, and a large hospital. Oppeln manufactures cement, cigars, machinery, cutlery, and there are breweries and lime kilns. Its trade, supported by a chamber of commerce, consists chiefly of grain and cattle. Devastated in 1260 by the Tartars, it passed in 1532 to Austria, but in 1742 became part of Prussia. Pop. 34,000.

Oppenheim. Town of Hesse-Darmstadt, Germany. It is on the left bank of the Rhine, 20 m. S.S.E. of Mainz. The Gothic church of St. Catherine contains the tombs of the Dalberg family (*q.v.*). Oppenheim, which has a trade in wine, was taken by the Swedes in 1631, and by the French in 1689, 1792, and 1794. Near by are ruins of an 11th century fortress. Pop. 4,000.

Oppenheim, EDWARD PHILLIPS (b. 1866). British novelist. Educated at Leicester, he became



E. Phillips Oppenheim,
British novelist
Russell

known as a writer of popular fiction, and a frequent contributor to magazines. His novels of mystery and sensation are marked by ingenuity of construction and dramatic

quality. They include *The Amazing Judgment*, 1897; *As a Man Lives*, 1898; *The Mysterious Mr. Sabin*, 1898; *The Master Mummer*, 1905; *The Mischief Maker*, 1913; *Mr. Grex of Monte Carlo*, 1915; *The Double Traitor*, 1918; *The Great Impersonation*, 1920.

Oppenheimer, SIR BERNARD (1866-1921). British merchant. Born Feb. 13, 1866, he became interested in the diamond industry in S. Africa. About 1917 he started factories where disabled soldiers could find employment at diamond cutting. He made his first experiments in Brighton, and, the undertaking proving successful, branches were opened at Cambridge, Fort William, and Wrexham, and the business was made into a limited company. Oppenheimer was created a baronet in 1921. He died June 13, 1921.

Opportunism. In general, the capacity of seizing a favourable opportunity. In a narrower sense, the regulation of one's course of action by circumstances rather than principles, often resulting in the sacrifice of the latter to the former. The name opportunists is especially applied in French history to the followers of Gambetta, the

moderate republicans, who limited their political aims to practicable measures.

Opposition. In British politics, the name given to the party that is out of power and that exists mainly for the purpose of criticising the party in power, and, if possible, supplanting it. An opposition is an essential part of parliamentary government, but in its modern sense the word was first used in 1826 by John C. Hobhouse, afterwards Lord Broughton. Gradually it came into general use, and the opposition became a regular part of the machinery of government, its leaders having recognized places and precedence in both Houses of Parliament. The word used in this sense passed into all parliaments of the British Empire, and into some foreign legislatures. In Great Britain until 1919 the Liberal and Unionist parties and their predecessors, Whigs and Tories, had shared alternately the duties of the opposition, but in that year, in consequence of the virtual disappearance of the official Liberals at the general election of 1918, the Labour party assumed the rôle of official opposition. See *Conservative*; *Liberal*; *Unionist*.

Opposition. In astronomy, the position of one heavenly body with respect to another when differing from it in longitude by 180°. The earth and another planet are in opposition when they and the sun are in a straight line.

Oppy. Village of N. France. In the dept. of Pas-de-Calais, 4 m. N. of the river Scarpe and about the same distance S.E. of Vimy, it was the scene of furious and continuous fighting during the battle of Arras in April-May, 1917, and just before the opening of the battle of Le Cateau (*q.v.*) in Oct., 1918. A fortified post in the Hindenburg Line, it was repeatedly attacked by the British advancing from Arras. It was taken and held in June, 1917, but lost again in the German advance of the spring of 1918. See *Arras*, *Battles of*.

Ops. In Roman mythology, wife of the god Saturn, and patroness of agriculture. The Romans identified her with the Greek Rhea (*q.v.*).

Opsonin. Term used in bacteriology to explain the effect which normal human blood serum has upon the destruction of bacteria in the blood by leucocytes. Experiment has shown that there are substances in the blood serum which in some way or other so modify bacteria as to render them more easily attacked and devoured by the leucocytes. This change is known as the opsonic effect, and

the substances in the serum which render the bacteria more easily destructible are called opsonins. By a highly technical bacteriological process an exact standard of the power of serum in this respect can be arrived at, and the serum of one individual compared with that of another before and after treatment. This standard is known as the opsonic index. See *Phagocytosis*.

Optative (Lat. *optare*, to wish). Name given to a form of the verb expressing a wish or desire. Like the subjunctive, it marks the action as a conception, as something which may or may not happen, not as an actual fact. Its use is most clearly marked in Greek.

Optical Glass. Variety of glass used in the manufacture of lenses for optical instruments. The first essential characteristic of optical glass is that it must be homogeneous, and this has made it one of the most difficult glasses to produce to perfection. Guinand in the 18th century made the first attempt at homogeneous flint glass manufacture by constantly stirring the molten glass, and in 1824 the Royal Astronomical Society appointed a committee to consider the question of optical glass making.

The researches of Abbe and Schott at Jena, however, on the effect of various oxides on vitreous fluxes led to the invention of Jena optical glass, now in general use. The old varieties of optical glass consisted mainly of silicates, while modern glass contains many oxides, e.g. those of barium, zinc, aluminium, etc., silicates and boric anhydride, which enable lenses of remarkable purity and suitable optical qualities to be manufactured.

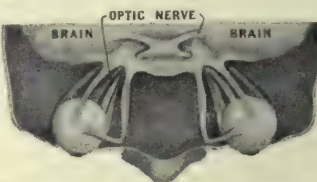
The glass has to go through a number of processes, e.g. moulding and annealing, and the high proportion of the finished glass which has to be rejected, on account of air bubbles, fractures, and other defects, makes the glass actually fit for optical purposes very expensive. Not more than one fifth of the total glass manufactured for optical purposes is actually used, as a rule. See *Glass*; *Telescope*.

Optician. One who makes, or who deals in, optical glasses and instruments. There is, in the United Kingdom, no legal status for opticians, and the term is often used by those who sell spectacles, but more properly it indicates one who, having passed the necessary examinations, is qualified by the Worshipful Company of Spectacle Makers, or by the British Optical Association. The Spectacle Makers Company holds a Royal Charter, and grants successful candidates

a diploma and the right to append the initials F.S.M.C. The British Optical Association grants a certificate and the right to append D.B.O.A. or F.B.O.A. The Fellowship of the Institute of Ophthalmic Opticians is open only to sight testing opticians who are qualified by either of the bodies mentioned. In the U.S.A., and in many of the provinces of Canada and Australia, compulsory qualification and registration are required before a person can engage in the practice of sight testing. *See Eye; Sight.*

Optic Nerve. Nerve of sight. Arising from the lower part of the brain, it passes forwards into the orbit, where it enters the eyeball, and its fibres spread out over the inner surface of the retina. Inflammation of the optic nerve, or

optic neuritis, is a serious affection which most frequently arises in the course of tumours or other affections of the brain, or Bright's disease. Optic atrophy is a degeneration of the nerve fibres



Optic Nerve. Diagram showing position of optic nerve from above

which may follow optic neuritis, or may be due to tabes dorsalis (locomotor ataxia) and other nerve diseases. The condition eventually results in blindness. *See Eye; Nerve.*

OPTICS: SCIENCE OF LIGHT AND VISION

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Among the articles which supplement the information given below are Dispersion; Lens; Light; Refraction; Relativity; Spectrum

The most familiar phenomena of vision are our inability to see objects round corners; the forms of shadows cast by opaque bodies; the formation of images of luminous objects by mirrors and the lenses of such instruments as reading glasses, telescopes, microscopes, cameras and projecting lanterns. A great deal of the knowledge we possess concerning these matters is very satisfactorily summarised in a few principles which are referred to as the laws of Geometrical Optics; these are statements which if assumed to be true will lead by the deductive methods of pure geometry to conclusions which are in very exact accord with experimental results. In this branch of optical science no hypothesis is made as to the nature of light beyond the simple assumption that it is an influence emitted from all visible bodies and capable of affecting the retinae of our eyes.

Umbra and Penumbra

Very little observation is required to convince us that this influence is propagated in straight lines. If one examines the shadow cast by an opaque body on a white screen in a room lit by one source of light only, an intensely black central part, called the umbra, is, in general, observed, around which is spread a less dark part, gradually fading into the complete illumination of the rest of the screen; this annular, partially illuminated portion of the shadow is called the penumbra.

Careful investigation will show that it is impossible to draw a straight line from any point on the

surface of the luminous source to any point in the umbra which does not cut through the opaque object, and that if we select any point in the penumbra it is possible to draw straight lines to points on a portion of the luminous source which do not meet the opaque object, the portion of the source becoming larger as the point chosen in the penumbra moves further out from the umbra, until we reach those parts of the screen in full view of the complete source. In particular, if the source is of very small dimensions, the penumbra is so small as to be imperceptible except at very close quarters, and the shadow consists almost entirely of an umbra.

Eclipses as Examples

The eclipses of the sun and moon are examples of shadows on an enormous scale, e.g. during total eclipses of the sun there is at any instant one comparatively small portion of the earth where the eclipse is actually total; this portion is the umbra of the shadow cast by the moon. Outside this lies a ring shaped portion, the penumbra, where the eclipse is only partial. Owing to the rotation of the earth, these portions move over the earth's surface, and thus we see the reason for the existence of the "track of totality." As a further illustration of rectilinear propagation we may instance the familiar "streaks" in front of a projecting lantern or within a fairly dark room into which sunlight is streaming through a window; but in this connexion it may be well to remove a common misconception. One is not "seeing

light" in these circumstances; such a phrase betokens a confusion of ideas; what we see is the dust and motes in the atmosphere which are being more than usually illuminated, and the cylindrical or conical form of these streaks arises from the rectilinear paths pursued by the elements of light emitted by the source. The fact of rectilinear propagation leads naturally to the use of the phrase, a beam of light, and still further to the conception that such beams are composed of extremely narrow beams which we idealize as straight lines and call rays.

Principles of Reflection

This concept of a ray is invaluable in the study of reflection and refraction of light. As a rule reflection from the surface of a body is quite irregular; the rays from a self-luminous source when they reach walls, floor, ground, etc. are scattered and redirected in all directions, otherwise such non-luminous, but illuminated, objects would not be visible from all points of view, as they actually are unless opaque bodies intervene. But provided the surface of a body has a certain amount of polish or smoothness, we begin to observe traces of regular reflection. The appearance of a well-polished table is an example of such partial regular reflections; and when the polish reaches that of the best glass or a brilliant metallic surface, practically all the reflected light is regularly reflected, and we get the phenomena of images.

In such cases each reflected ray makes the same angle as its incident part with the "normal," i.e. the line perpendicular to the reflecting surface at the point of incidence, and the incident ray, reflected ray and normal lie in one plane. Such a deviation from their original paths causes a small cone of rays, which could enter the pupil of an eye, originally emitted by a minute portion of a luminous or illuminated body (a "point-source"), to appear on its reception by an eye to be diverging from quite another point. The aggregate of such "point-images" forms the image of the body which is the aggregate of the original "point-sources." In certain cases of curved mirrors, a cone of rays originally diverging from a point-source may be made to converge by reflection and thus pass through a point only to diverge once more from what is called a "real" image which is actually in front of the mirror and not behind it. The reader may verify this for himself by looking into the hollow of a spoon with a lamp near at hand.

When light passes from one transparent medium to another, as from air to glass or water, or vice versa, it is found not only that we have the phenomenon of reflection, but also that the portion of the light which enters the second medium is in general diverted from the original path. This occurrence is called refraction, and in the discussion of it the concept of a ray enables us to reduce our knowledge concerning refracted light to two simple geometrical statements: (1) the incident ray, the refracted ray, and the normal are in one plane; (2) the sine of the angle of incidence bears to the sine of the angle of refraction a ratio which is definite for two given media. Thus from air to glass this "index of refraction" is $3/2$; from glass to air $2/3$; air to water $4/3$; water to air $3/4$; water to glass $9/8$; glass to water $8/9$; and so on. Each pair of substances has its definite ratio. The images produced by the lenses in reading-glasses, telescopes, cameras, etc., are due to the deviations of the rays of light emitted by a source, and their redirection into new paths which pass "really" or "virtually" through the points of the images which are actually seen by us; and experiment confirms the fact that all such appearances can be arrived at deductively by the methods of geometry, if we apply the two simple statements enunciated above to the given conditions in any case.

As stated, geometrical optics gives a very adequate theoretical explanation of the facts concerning image formation, but it is quite inadequate to explain a large number of observed results of experiment in optical science. The phenomena of interference, diffraction, polarisation, and even chromatic dispersion are quite beyond its scope. As a simple statement of interference we can say that it is possible for two specially adjusted sources of light to produce darkness along certain paths, this being compensated by reinforced illumination along others. In diffraction we deal with the existence of certain colour fringes well inside the geometrical shadow cast by the edge of an opaque object. In polarisation we meet with the phenomenon of double refraction by certain crystals (e.g. Iceland spar, fluor spar, mica, aragonite), each of the two refracted rays arising from one incident ray being plane-polarised; meaning that for each refracted ray there is a particular plane containing the ray which has important physical properties in any

subsequent treatment of the ray. Thus if the ray is directed on to a piece of glass at a definite angle, and if the "plane of polarisation" of the ray is at right angles to the plane of incidence on the glass, no reflection takes place, the entire energy of the ray being transmitted into the glass.

In such phenomena, no adequate explanation is possible without the help of a definite theory as to the nature of light. The treatment of such experimental data and the hypothesis as to the undulating nature of light which has developed during the past century and a half are treated in works on physical optics. In them appeal has to be made to mathematical analysis of a type much more complex than that involved in the comparatively simple geometry employed in geometrical optics.

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Optime (Lat., excellently). Adverb taken from the phrase *optime meruit*, he has deserved very well, and used at the university of Cambridge as a name for candidates for honours who are placed in the second and third classes of the mathematical tripos. They are known as senior and junior optimes respectively. *Pron.* Optim-ee.

Optimism (Lat., *optimus*, best). The tendency to regard things in the most favourable light, opposed to pessimism. In philosophy, the doctrine that this world is the best of all possible worlds. There are two kinds of optimism, relative and absolute. The world may not be absolutely good, but at least the good in it is predominant. Leibniz,

in his *Theodice* (justification of God), endeavours to prove that God, in His infinite intelligence, conceived an infinity of possible worlds, and called into being the one which He regarded, all things considered, as the best. But even this does not exclude the idea of infinite perfectibility. *See* Pessimism.

Option (Lat., *optare*, to choose). Literally, the act of choosing. In financial language an option is the right to buy or sell something, for which right money is paid. Thus a man pays for the right to buy certain shares at a certain price, or to buy a house or property of other kinds. If he does not wish to exercise his option he loses the money paid down. An option to buy is termed a call, and an option to sell a put. *See* Stock Exchange.

Optophone. Instrument, invented by E. E. Fournier D'Albe, which converts optical into phonetic or sound effects, to enable blind persons to read printed matter by ear. It is based upon the chemical element selenium, which possesses the property of offering to electricity passing through it a resistance which varies with the degree of illumination to which it is subject.

The instrument consists of a brass disk perforated with eight rings of holes, the number of holes in the rings being proportional to the vibrations in the notes of a musical octave. The disk revolves adjacent to an inclined cover containing a row of eight holes which register at intervals with those in the disk, and over the perforations in the cover is passed a strip of gelatin upon which is printed in large block type the matter to be read. Light from a strip-light electric lamp is concentrated by a water tube and passed through perforations in the revolving disk and those perforations in the row in the cover not obstructed by the type. The light, traversing the

perforations is received upon a selenium tablet connected with a telephone receiver through a high-voltage battery. By this means each letter as it passes the row of perforations is accompanied by a characteristic sound in the receiver, which sounds can be recognized after a certain amount of practice, and the printed matter thus interpreted.



Optophone. Blind person reading by means of the instrument which converts optical into phonetic effects

Opuntia. Genus of succulent plants of the natural order Cactaceae. All are natives of America, and some are familiarly known as prickly pear and Indian fig. The majority require treatment in greenhouses, as some of them reach a height of 20 to 30 ft. Several species are quite hardy in Britain on well-drained soil. They flower during the summer months, with red, yellow, or purple blossoms, and thrive in a mixture of loam and limestone. Opuntias should be watered liberally during the summer months, but require no water from Nov. till Feb. They are propagated by cuttings of the stem planted in gritty soil in early spring.

Or (Fr.) In heraldry, gold, the principal metal. It is represented in drawings by small dots over the whole space, and in painting either by gilding or yellow pigment. See Heraldry, colour plate.

Oracle (Lat. *orare*, to speak, pray). Originally, in Greece, the seat of worship of a deity where responses were given to inquirers, usually with reference to public events. The word was also used of the response itself. Such responses were accepted as representing the voice of the deity as expressed through a priest or priestess in a state of religious exaltation, or through some other medium, as at the oracle of Zeus at Olympia, where the divine will or knowledge was interpreted by inspection of the entrails of sacrificed animals.

The oracle was a characteristic feature of the religion of the ancient Greeks. Other well-known Greek oracles besides that at Olympia were the oracle of Zeus at Dodona (*q.v.*) in Epirus, which was considered the most ancient, and that of Apollo at Delphi (*q.v.*), the most famous of all. Its responses were interpreted by the priests in hexameter verse. Oracular responses in general were said to be characterised by ambiguity, a notable example being the response to Croesus (*q.v.*). Though the Delphic oracle was accused by the Athenians at any rate of partiality towards the Spartans, there is no doubt that on the whole the ancient oracles were on the side of morality, both public and private. An oracle was always consulted before the foundation of a colony. The oracle of the hero Amphiaras, at Oropus in Attica, gave replies to inquirers in dreams. Oracles also existed among the ancient Babylonians and Egyptians. The Hebrew Urim and Thummim (*q.v.*) was a kind of oracle. See Divination; consult also Greek Oracles, F. W. H. Myers, in *Hellenica*, ed. E. Abbott, 2nd ed. 1898.



Opuntia. Stem and flower of the Indian fig

Oräfa Jökull. Volcanic mt. of Iceland, the culminating peak of Vatna Jökull (*q.v.*), alt. 6,425 ft. It is the highest point on the island, and was first scaled in 1891 by F. W. W. Howell. Eruptions oc-

years 1835-47. It is divided into the five civil arrondissements of Oran, Mascara, Mostaganem, Sidi-bel-Abbès, and Tlemcen, and three military divisions. Its area is 23,500 sq. m. Pop. 1,230,200. See Africa.

Oran. Seaport of Algeria. On the Gulf of Oran, it is 260 m. by rly. from Algiers, and capital of the dept. of the same name. The city, which has an excellent harbour, now ranks as the second city of Algeria, exporting wine, cattle, grain, and minerals. The modern parts are well planned and stoutly built in the fashion of a French city; notable buildings are the Château-Neuf (1563), the museum, and library, R.C. cathedral, and the Grand Mosque. Oran was captured by the Spaniards in 1509, abandoned by them in 1792, and was occupied by the French in 1831. Pop. 123,100.

Orange (Arab. *nārang*). Fruit of *Citrus aurantium* and its varieties, evergreen trees of the order Rutaceae, natives of Asia. Whether the several varieties of orange are the descendants of a single wild species or of several species is an open question, oranges having been cultivated for so many cen-



Oran, Algeria. View of the native quarter

currred in 1341, 1342, 1598, and 1727.

Orakzai. Pathan tribe of the Indo-Afghan frontier. Living S. of the Afridi, they differ in their less guttural N. Pushtu speech, and less robust physique, and are fewer in number. They occupy the lower valleys, where they raise winter crops.

Oran. Department of Algeria. Bordering upon Morocco, it was conquered by France during the

turies that there has been time for many varieties to have arisen. The date at which the orange tree was introduced to Europe is not known; but it is believed the conquering Arabs brought it from India, its native country, as far west as Arabia in the 9th century, and later to Italy, S. France, and Spain. A tree at the convent of S. Sabina, at Rome, is reputed to date from



The Oracle. A scene from Eastern life. From the picture by J. W. Waterhouse, R.A., now in the Tate Gallery, London

about 1200; and another at Versailles is said to have been sown in 1421. The first British oranges appear to have been grown by Sir Francis Carew at Beddington, Surrey, from 1595 onward. The principal varieties now grown are the sweet S. Michael's, the bitter Seville, the Jaffa, the Maltese blood, the Tangerine, and the Mandarin.

The majority of the imported oranges have had to be gathered and packed while still green, and undergo a sort of ripening in transport; consequently, they have not the delicious flavour of those ripened naturally on the tree, even in Britain. Such fruit cannot compete commercially with the imported article, so that British orange trees are grown chiefly



Orange. Spray of foliage, flower, and fruit. Inset, fruit in section

raise budded trees only. The required varieties are budded on seedling stocks of the wild or sour orange, and these can be transplanted two years after budding.

Being gross feeders, orange trees must be well manured. It is essential that they receive plenty of potash; stable manure applied alone causes "die-back." They also require spraying to keep down red-spider, scale, and other insect or fungus pests, while careful pruning is most necessary. Well treated, the orange is extraordinarily prolific. Yields of fourteen and even sixteen thousand oranges have been secured from a single tree. Orange trees continue in bearing for a great number of years. There are many instances of trees bearing well for a century on end. Oranges are now cultivated in all warm countries. See Citrus.

Orange, GABRIEL OR GROOTE RIVER. Largest river of S. Africa. It rises near the Mont aux Sources (11,000 ft.) in the highest portion of the Drakensberg Range, in the N.E. of Basutoland. Its basin comprises 40,000 sq. m. of the high plateau of S. Africa, and it reaches the Atlantic Ocean about 45 m. N.W. of Port Nolloth. The upper

tributaries flow among the magnificent mountains of Basutoland, and on one of them occur the falls of Malut-sinyane or Le Bihan, with a drop of 630 ft. There are no permanent left bank tributaries of any size, but on the right bank is the Caledon, whose basin is a rich grain-growing district. It joins the Orange above Bethulie, and the Vaal joins

above Prieska; all other perennial affluents are short.

Below Prieska the Orange flows, often through narrow, almost impassable gorges, for 500 m. in a sandy, arid district, the desolate S. portion of the Kalahari Desert, with numerous tributary valleys usually dry. Below Upington are the Great Falls of Aughrabies, 60 ft. wide, 400 ft. drop, at Waterval, which exceed both Niagara and the Victoria Falls in height, but lack their accessibility and beauty. W. from Palmietfontein the Orange forms the N. boundary of the Cape Province. It was explored in part, in 1779, by Colonel Gordon, who hoisted the Dutch flag in the middle of the stream, and named it after the stadtholder of Holland.

Orange. Town of France. It is on the river Meyne, 17 m. by rly. N. of Avignon. The ancient



Orange arms

Arausio, it contains a Roman triumphal arch, probably erected about A.D. 25 and extensively repaired since 1825, and a Roman theatre, dating from the 2nd century, the colossal façade of which is visible from all parts of the town. The tiers of seats were restored in 1894, and the building is now a national theatre in which open-air plays are occasionally performed. The cathedral of Notre Dame dates from the 11th century. Here are textile, dyeing, and tanning industries. A principality which passed in the middle of the 16th century to the house of Nassau, it gave its name to the family that was afterwards to rule the Netherlands and England. On William III's death the principality was claimed by Prussia, which ceded it to France by the Treaty of Utrecht, 1713.



Orange, France. Interior of the Roman theatre, showing the restored tiers of seats



Orange. Gathering the harvest, a scene in a Californian orange orchard

for ornament. For this purpose they may be raised from seed ("pips") or cuttings, and grown in good loam, to which has been added sharp sand and crushed bones, or dry cow-manure. The seeds will germinate in a warm greenhouse (about 60° F.), and when the plants are large enough they should be transferred to tubs, which may be placed outside in the summer, and in winter given a temperature of 50° F. Sheep-dung mixed with loam should be given as a top-dressing in spring, and during summer they require liberal watering.

The cultivation of the orange, on a commercial scale, is practised in Florida and California. There seedling orange trees are found to last longest, and are more hardy. They are, however, extremely thorny and the fruit is most inferior. Practically all cultivators

Orange. Town of New South Wales. Situated 3,000 ft. above sea level, and 190 m. W. of Sydney by rail, it is the centre of a fruit and wheat-growing district, and a rich mineral area, yielding gold, silver, and copper. The town has been since 1830 an important point on the route W. from Sydney over the Blue Mts., first by the main road, and later by the rly. Pop. 7,700, including Orange East.

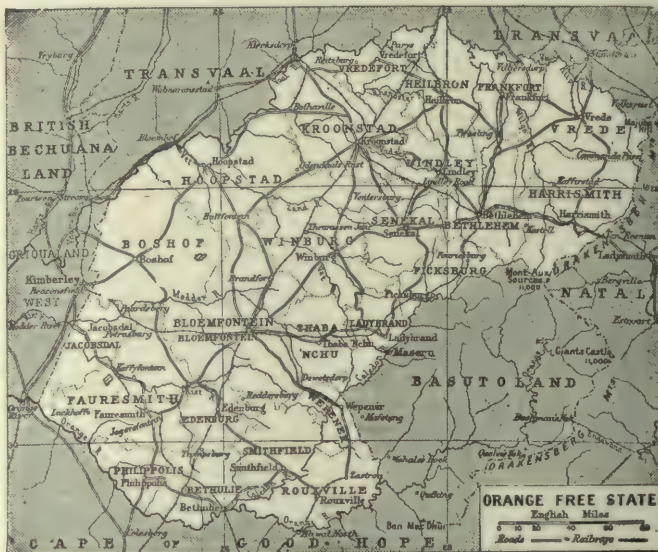
Orange. Town of Connecticut, U.S.A., in New Haven co. It stands on Miller's river, 85 m. W.N.W. of Boston, and is served by the New York, New Haven and Hartford rly. Manufactures include sewing-machines and accessories, machinery, lumber products, and boots and shoes. Pop. 13,000.

Orange. City of New Jersey, U.S.A., in Essex co. It is 12 m. W. of New York, and is served by the Erie and the Delaware, Lackawanna and Western rlys., and by electric services communicating with Newark and other near cities. It contains fine mansions belonging to New York business people, and is within easy reach of several picturesque spots. Its chief manufacture is hats, for which it is noted. Settled about 1670, Orange was incorporated as a township in 1806, and chartered as a city in 1872. Pop. 33,300.

Orange, EAST. City of New Jersey, U.S.A., in Essex co. It adjoins Newark in the W., and is served by the Erie and Lackawanna rlys. Chiefly a residential place, it manufactures medical appliances and electrical apparatus. East Orange was formed from part of Orange in 1863, and became a city in 1899. Pop. 50,700.

Orange, WEST. Town of New Jersey, U.S.A., in Essex co. It is 12 m. W. of New York, and is served by the Erie rly. It is a residential town, Llewellyn Park containing many fine mansions. Here is the laboratory of T. A. Edison, the predecessor of which was destroyed by fire in 1914. Hats and boxes are made. West Orange was formed from part of Orange in 1862. Pop. 15,600.

Orange. European family now represented by the ruler of the Netherlands. It is taken from the little French principality, which had its own rulers from about 900. In 1500 the family died out, and Orange passed to a member of the Nassau family, later princes being known as of Orange-Nassau. One of these was William the Silent. The title was retained by his descendants, one of whom was William III, although their interests were mainly in the Netherlands. See Nassau; Netherlands.



Orange Free State. Map of the province of the Union of South Africa, formerly a Boer republic

Orange Free State. Province of the Union of South Africa. Entirely inland, it is bounded N. by the Transvaal, E. by Natal and Basutoland, and S. and W. by the Cape Province. The area is 50,389 sq. m.; length about 350 m. and breadth about 300 m.

The country is an almost treeless tableland at an average alt. of about 5,000 ft., sloping from the Drakensberg range in the E. to the valleys of the Orange and Vaal rivers, which form its N. and S. boundaries. Subsidiary ranges and hills rise in many parts



Orange Free State arms

above the veldt. The climate is temperate, and the rainfall moderate, chiefly in the form of violent thunder-storms in the late summer. There is much good soil, but irrigation is required in many parts. Cattle, sheep, and ostriches are reared. Maize is the chief crop, others being wheat, oats, potatoes, tobacco, and fruit. Diamonds, of which there are rich deposits, and coal are worked, and gold and iron are also found. Wool, diamonds, and ostrich feathers are exported.

The Cape to Cairo Rly., with numerous branches, traverses the province. Bloemfontein is the capital, and Jagersfontein and Harrismith the next largest towns. The Dutch Reformed Church is the largest religious body. Pop. 528,000, of whom 175,000 are white.

The province was annexed by

Great Britain in 1900 during the South African War. Responsible government was given to it in 1907, and in 1910 it joined the Union of South Africa, being renamed the Orange Free State in place of the Orange River Colony. To the House of Assembly, at Cape Town, it sends 17 members, and to the Senate eight. The franchise is confined to British subjects of the white races. For managing its internal affairs the province has an executive committee of four members, presided over by an administrator appointed by the Union. This is responsible to a council of 25 members elected for three years. The matters under its control include education, and its income is derived from taxation and subsidies from the Union Parliament. The judicial system consists of a provincial court at Bloemfontein from which there is a right of appeal to the supreme court.

European authority in the Orange Free State began about 1824, when some Dutch farmers crossed into it from Cape Colony. Previously the only inhabitants had been Hottentots, Bushmen, and other Africans. In 1836 more Dutch farmers arrived, and to these one of the chiefs sold some land between the Vaal and Vet rivers. The Dutch settlers drew up a constitution and declared their land a republic. Meanwhile, in 1843, the British had appeared and taken the Basutos under their protection. Some of the Boer settlers thereupon left the country, and the position of the rest was further endangered by a short war

between the Dutch and the Griquas, in which British troops fought on the side of the latter. In 1845 a British Resident at Bloemfontein took over the government of the country, while Winburg remained the capital of the Dutch republic, there being no clear dividing line between the two conflicting authorities. In 1848 British sovereignty was formally proclaimed by Sir Harry Smith, who defeated the Boers under Pretorius, and drove them across the Vaal.

The country was at this time known as the Orange River Sovereignty. The British position was unsatisfactory, and on June 30, 1854, a proclamation declared the abandonment of British sovereignty. The Boer republic, then formed, lasted until 1900. It was named officially the Orange Free State. Warfare with the Basutos was carried on with intervals until 1869, when the boundary between the two peoples was defined. The British helped to negotiate this treaty, although they had previously refused to take the state again under their sovereignty. By its part of Basutoland was added to the republic.

Under the long presidency of Sir J. H. Brand, that ended in 1888, the country prospered, being aided by the opening up of the diamond fields, which averted a financial disaster. Under his successor, F. W. Reitz, the Boer republics entered into closer relations with each other, and in consequence of this the Orange Free State, under President M. T. Steyn, joined the war against Great Britain in 1899. This ended with the occupation of Bloemfontein and the annexation of the country. By the treaty of May, 1902, the Boers acknowledged the rule of Great Britain. See S. Africa; Transvaal; consult also The Boer States, A. H. Keane, 1900; History of S. Africa, G. MacC. Theal, 1908.

Orange Society. Irish political association founded in Armagh in 1795 for the defence of Protestantism and the maintenance of the Protestant ascendancy in Ireland. For a century before the Revolution of 1688 there was bitter hostility between Roman Catholics and Protestants in Ireland, aggravated by the regime of the Commonwealth and the plantation, especially in Ulster, of colonies of English Puritans and Scottish Presbyterians. The overthrow of James II by William of Orange made the latter the hero of the Protestant ascendancy, which was then thoroughly established.

In the N., Protestant Peep o' day Boys and Roman Catholic

White Boys and Defenders vied with each other in the perpetration of outrages. The antagonism became particularly virulent in the co. of Armagh, where the Orange Society sought in effect to make it impossible for R.C.'s to live. The society soon came into collision with Wolfe Tone's Society of United Irishmen, which had for its object the union of R.C.'s and Protestants for the overthrow of the English ascendancy, though it gradually became a R.C. movement. The society was unjustly held responsible for the violence committed in the name of the law in the suppression of the insurrection of 1798; whereas its existence was merely a symptom of the disease of religious animosity affecting both sides. It was, however, antagonistic to the Union of 1801, which was expected very greatly to impair Protestant ascendancy.

In the 19th century Orangeism was directed to the repression of the movement for Catholic emancipation. It can hardly be said to have become definitely loyal to the empire until O'Connell's movement for the repeal of the Union, which, since Catholic emancipation

had been granted (1829), would have meant the establishment of R.C. ascendancy. See Ireland.

Orange Street. London thoroughfare. It runs W. from the National Portrait Gallery, St. Martin's Lane, to St. Martin's Street, W.C. At its N.W. corner stood Orange Street chapel, built 1685 for Protestant refugees from France, and later a Congregational place of worship, demolished in 1921. The St. Martin's Street frontage of the chapel adjoined the house of Sir Isaac Newton, later the home of Dr. and Fanny Burney, taken down in 1913 for re-erection at Hitchin, Herts.

Orange-tip Butterfly (*Euchloë cardamines*). Small butterfly of spring, common in British lanes, and distributed over Europe and a great part of Asia. It measures about 1½ in. across the expanded wings. These on the upper side are mainly white with a black base, and the tips of the fore wings margined with black, broadly in the female, narrowly in the male, in which sex nearly half the wing is orange. On the under-side the hind wings are heavily blotched with green. When the insect alights on the clusters of small white flowers of Cruciferae or Umbelliferae and elevates its wings over its back, the hind wing becomes part of the flower cluster and the butterfly is invisible as such. See Butterfly, colour plate.

Orang Utan (Malay, man of the woods). Species of anthropoid (man-like) ape (*Simia satyrus*) found only in Borneo and Sumatra. A full-grown male stands about 4½ ft. high, and its arms are so long



Orang Utan. Specimen of the man-like ape of Borneo and Sumatra, showing its characteristic attitude in the fork of a tree; top, crouching on the ground

that in the erect position the fingers almost touch the ground. The legs are short, and when walking the animal rests on the knuckles of the fingers and the outer edges of the feet, the soles being turned inward. It thus progresses very slowly on the ground, but in the trees it can swing itself along with fair speed, though it seems always to be moving with deliberation. The remarkable disproportion of the limbs is one of the chief features that distinguish the orang from the gorilla and the chimpanzee; but, in addition, the skull is differently shaped, and the numbers of the vertebrae and wrist bones are different. In almost all its special anatomical features the orang is farther removed from man than the other large anthropoids.

The head of the orang is compressed from back to front, giving the appearance of a high forehead, and the jaws project considerably. In old males huge ridges develop down the cheeks, and the skin round the neck is distended in such a fashion as to suggest the disease known as goitre. The skin is covered with long, shaggy, reddish-brown hair, and in old animals there is often a full beard.

Orangs occur in the densest forests, and are usually found in families consisting of the two parents and a few young ones. They construct strong but rough nests of sticks in the trees, in which they pass the night. They feed by day, principally on fruit, though they also eat leaves and shoots. In captivity, young specimens are docile and affectionate. *See Man.*

Oranienbaum. Town of N.W. Russia. It is in the govt., and 25 m. W., of Petrograd, with which it is connected by rly., and stands

on the S. shore of the Gulf of Finland, opposite Kronstadt. It contains a château, built by Prince Menshikov in 1714, and is a favourite summer resort. Pop. 8,000.

Orora. Aboriginal tribe of cultivators, mostly in Bihar and Orissa and the Central Provinces, India. Calling themselves Kurukh, and numbering, in 1911, 751,983, one-fourth have become Hinduised in religion and speech; three-fourths are still wild hill-dwelling animists. They worship visible objects, such as stones and posts, and at their annual Khaddi festival, for ensuring good crops, their aboriginal deity, Dharmesh, is symbolically wedded to Mother Earth. Their Dravidian language, allied to Khond, is intermediate between the Tamil and Telugu groups.

Oratorians. Familiar term for the R.C. Congregation of the Oratory of Our Lord Jesus Christ, and that of the Oratory of S. Philip Neri (*q.v.*). The first named was founded by Cardinal de Bérulle, at Paris, in 1611, composed of priests, and was instituted to deepen devotion, promote professional studies, and generally to strengthen ecclesiastical discipline. Its rule was adopted by the Oratory of the Immaculate Conception founded at Paris in 1852. The Oratory of S. Philip Neri dates from 1564. In 1575 it was given the old church of the Vallicella, Rome, on the site of which S. Philip caused a beautiful new oratory to be erected. The society is composed of priests without vows, but agreeing to a rule approved by Paul V in 1612. Each house is independent. Introduced into Britain in 1847 by J. H. Newman, its chief centres in England are at Birmingham and Brompton (*q.v.*).

of which was composed by Emilio Cavaliere. This was performed in the Oratory in 1600, and forms the first definite landmark in the history of oratorio. Unlike later ones, it was written for production upon the stage, and the composer, who died before the first performance, left complete and detailed directions as to its representation. The characters wore special costumes; the chorus assisted, not merely in the singing, but also in the representation by the adoption of suitable gestures; the accompaniments and instrumental movements were played by an orchestra concealed behind the scenes, and at certain points in the story the performance of dances of different kinds was suggested.

After the death of Cavaliere no successor was found to carry on his work, and, although during the earlier part of the 17th century a few sacred dramas with music appeared, no real development took place until Carissimi gave the oratorio a more definite character by increasing the importance of the part allotted to the chorus and by the higher musical and dramatic quality of his choruses. Two of his finest works are Jephthah and Jonah.

Oratorio in Italy

A still higher standard of maturity and musical treatment was reached in S. John the Baptist, produced in 1676 by A. Stradella, a pupil of Carissimi. After this time the oratorio in Italy gradually fell under those influences which also determined the form and character of the opera. The influence of the solo singer became paramount, and the music was almost entirely for solo voices, while the choral portions fell into the background.

While the origin of the oratorio in Germany may be traced to the same primitive ideas as those which influenced its rise in Italy, there were special circumstances which influenced the particular form it took in that country. The religious character of the German people, which revealed itself at the time of the Reformation, was also seen in the special attraction which the story of the Passion had for them.

The four settings of the Passion by Heinrich Schütz (b. 1585) mark a definite beginning in that special form of oratorio which eventually led to the great Passions of J. S. Bach (b. 1685), although The Resurrection of Schütz, which appeared before his Passions, can claim to be the first surviving example of German oratorio.

The oratorios of Bach and Handel form the two most important landmarks in the history of the oratorio. Bach's chief works

ORATORIO: SACRED MUSICAL DRAMA

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In connexion with this article see the biographies of Bach; Elgar; Handel; Mendelssohn; and other composers of oratorios. See also Music; Mystery Play; Passion

An oratorio is a sacred story or drama set to music, in which solo voices, chorus, and instruments are employed. Oratorio occupies a similar place in sacred music to that of opera in secular music, but is performed without the aid of scenery, costumes, etc.

The idea underlying the oratorio may be traced to the plays of the Middle Ages which were employed as a popular method of instruction. By means of these plays sacred history and moral and religious instruction were presented in an attractive manner, and in a form which could be readily understood by the uneducated.

S. Philip Neri (*q.v.*) introduced into his church the acting of sacred dramas, more refined than the usual popular representations, and also the singing of hymns in Italian. In his Little Oratory in Rome the musical services of the Oratorians were held from about 1574. These early performances of sacred drama interspersed with sacred music gradually led to the conception of the oratorio as a complete work of musical art. Oratorio is merely the Italian form of oratory.

The earliest surviving work to which the name oratorio is applied was called The Representation of the Soul and the Body, the music

in this form are his two Passions—according to S. John and S. Matthew—and his Christmas Oratorio. The S. Matthew Passion is his greatest work, and in it he has used solo voices, chorus, double chorus, and orchestra to present a vivid musical picture of the world's greatest tragedy, which for intense earnestness and dramatic power stands alone in the realm of music. The Passions of Bach differ from the ordinary oratorio form in that they specially emphasise the important points of the story by the introduction of solos and choruses of a reflective and meditative character, and also by means of chorales sung by the whole body of listeners, thus giving the congregation a definite part in the performance.

Work of Handel

The oratorios of Handel stand in marked contrast to the deeply devotional works of Bach. They were written as a form of musical entertainment, and several were first produced at the same theatre and upon the same stage as that upon which his operas were produced, although without scenery or action. In their general form the majority follow more or less closely some Biblical story. The Messiah is an exception in that it aims at a presentation of the scheme of salvation beginning with the prophecies and leading step by step to the Ascension. While many of Handel's vocal solos are full of beauty and deep feeling, the choruses are the distinguishing feature of his oratorios. Their greatness is only fully realized when the simplicity of their harmony is compared with the grandeur of their musical effect.

Haydn's *Creation* presents a series of tone pictures descriptive of the beginning of the world, and is the first oratorio in which the orchestra and the orchestral accompaniments are treated upon modern lines. While *The Creation* possesses several fine and effective choruses, it is rather distinguished by the freshness and charm of its vocal solos and the delicate, suggestive and richly varied treatment of the orchestra. In Spohr's *Last Judgment*, a still more modern feeling is present and emphasised by the free use of that chromatic harmony which is so characteristic of this composer's work.

The development of the oratorio upon essentially modern lines was carried to a much higher plane by Mendelssohn. Of his three works *Lobgesang*, *St. Paul*, and *Elijah*, the last reaches the highest level and reveals the composer's complete mastery of choral

and orchestral effect in the production of vivid musical pictures of some of the most dramatic incidents in the life of the prophet. Since the time of Mendelssohn many oratorios have been produced, the greater number having been written either by English composers or for English audiences.

It is a noteworthy fact that works in which the chorus takes an important part have always made a specially strong appeal to English people. The variety in scheme and treatment adopted by modern composers is seen in Gounod's *Redemption* with its superabundant recitative and rich orchestral colouring; in Parry's *Job* with its fine setting of the "Lamentation" and its chain of dramatic choruses; and in Elgar's *Dream of Gerontius* in which the composer has made consummate use of all the resources of modern musical art.

Bibliography. The Oxford History of Music, ed. Sir W. H. Hadow, 1901; The Story of Oratorio, Annie W. Patterson, 1902; A History of Music in England, E. Walker, 1907.

Oratory. The art of speaking in correct, expressive, and fluent language, in order to please or persuade the hearers.

Oratory first became a force in the time of the Greek Republics. In 4th century Athens, the sophists (*q.v.*) made it their chief aim to teach oratory as a means to personal success. Eloquence was brought to the highest perfection, and Demosthenes, in spite of many physical disabilities, attained an excellence never surpassed. Under the Roman Republic, public speaking became a principal means of acquiring power, honour, and distinction. The Romans derived this art from the Greeks, but though in form it is similar, and is marked by the Roman qualities of method and stateliness, it lacks that spontaneity and sensitiveness which distinguish the orations of the Athenians. Of those who attained distinction, Cicero by the magic of his style stands alone.

Growth of Pulpit Oratory

The first orator to receive a salary from the state as public teacher was Quintilian, a pleader in Rome. Of all the ancient writers on this subject, he is perhaps the most instructive: explaining from observation as well as from experience, in his *Institutiones Oratoriae*, what constitutes the well-graced orator. The artificial oratory of panegyrics and academic declamations was taught by professional rhetoricians, such as Dion Chrysostom (*q.v.*), until with the decline of the Roman empire and the introduction of

Christianity a new form of eloquence, that of the pulpit, was established, of which S. John Chrysostom (*q.v.*) was a great master. During the Middle Ages oratory suffered from the dominance of scholastic rules, though some of the friars cultivated unconventional popular methods.

In modern times oratory was chiefly associated with debates in parliaments and the law courts. In England Shaftesbury, an earnest student of Cicero, was the first great parliamentary debater. Pitt, Chatham, Sheridan, Fox, and Burke being the most distinguished of 18th century speakers. The Americans paid great attention to the art, and among the 19th century orators, Webster and Lincoln were prominent.

Training of the Orator

One of the first essentials of the public speaker is a fund of general information. The mind must be quick to respond to the exigency of the moment, and to this end memory should be carefully cultivated. Wide reading, an extensive vocabulary, apt quotations contribute to the orator's equipment.

In preparing a speech, a summary of points should be made, so that the sequence may be given in due order; variety of metaphor and simile is necessary, that the same thought may be shown from different standpoints. Above all, the speaker must have a thorough knowledge of his subject.

The delivery is hardly of less importance than the matter. The voice must be flexible, and monotony must be avoided by change of pitch, tone, and rate of delivery. It is because of their monotonous method of speaking and droning indistinctness that many present-day teachers, instead of stimulating interest, only lull their hearers into hypnotic tranquillity.

Gesture and action must be spontaneous, formed on the basis of individual personality, and the speaker should remember that narrow and confined movements are not only ungraceful but ineffective. The value of facial expression is great, and that of the rhetorical pause must not be forgotten. See Acting; Cicero; Demosthenes; Elocution; Preaching; Rhetoric.

Action Band

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Oratory, CONGREGATION OF THE. Roman Catholic congregation of priests, founded at Florence in 1556 by S. Philip Neri, popularly known as the Oratorians (*q.v.*).

Orbit. Bony socket which contains the eye (*q.v.*).

Orbit. In astronomy, the path of a heavenly body. The orbits of planets or satellites round their primaries are ellipses, save for perturbations due to the effect of other heavenly bodies; the orbits of comets are ellipses, parabolas, or hyperbolas. See Nodes.

Orcagna. Name sometimes given to the Italian sculptor Andrea di Cione (*q.v.*).

Orchard. Plot of land devoted to the cultivation of fruit trees, especially standard apples, pears, cherries, and plums, cultivated in turf. The best situation for an orchard is one which slopes gently S. or S.W., and is sheltered from N. and N.E. gales. Shelter may be afforded by the establishment of a screen of walnuts, chestnuts, and other nuts, followed by an inside ring of the hardier cooking apples, and so on down the slope. The best soil for the cultivation of fruit is a deep, rich, moist loam resting upon a subsoil of chalk or gravel. A heavy clay subsoil at the roots of fruit trees retains the moisture in a stagnant form, and is liable to introduce canker and other diseases. The trees should be planted 25-30 ft. apart every way, in quincunx style, i.e. in straight lines, but so that no tree is exactly opposite its neighbour in the next row. Sheep and poultry turned into an orchard provide valuable manure, but cattle must be kept out, as they cause great damage, especially in newly established orchards. See Fruit-farming.

Orchard House. General name given to glass-houses, usually of the lean-to or three-quarter span variety, devoted to the culture of fruit. The varieties of fruit most suitable for orchard-house culture are apples, apricots, cherries, figs, grapes, peaches (including nectarines), pears, and plums. Orchard houses may at all times be used, between seasons, for catch crops of salads and other similar surface-rooting subjects. See Fruit Farming; Greenhouse.

Orchardson, SIR WILLIAM QUILLER (1835-1910). British painter. Born in Edinburgh, March 27, 1835, he studied at the Trustees' Academy, and settled in London in 1862. He became A.R.A. in 1868, R.A. in 1877, and was knighted in 1907. He painted historical genre with a definite aesthetic motive; but the oft-repeated brown tone of his pictures

later developed into a mannerism. As a portraitist he steadily increased his reputation up to the year of his death, which took place at Westgate-on-Sea, April 13, 1910, the Lord Blyth, his last portrait, being one of his finest works. See Art; consult also The Art of Orchardson, W. Armstrong, 1895.



Elliott & Fry

Orchestra. Musical term. Originally it meant only the platform or staging to accommodate the band and chorus, and other performers. This use of the word comes from the Greek theatre, where the orchestra was the place for music and dancing (*Gr. orcheisthai*, to dance) between the audience and the proscenium. Later the word was applied to the orchestral band, both players and instruments.

Orchestral Band. Group of instruments, including strings, wood-wind, brass, and percussion, commonly called the orchestra. The earliest attempts at forming such a band as we now know by this name were made about 1600, in which year, at Rome, Cavaliere's oratorio, The Representation of the Soul and the Body, had an orchestra consisting of a double lyre or viol di gamba, a harpsichord, a double guitar or bass lute, and two flutes.

Later in the same year, at Florence, Peri's opera, Eurydice, had an accompaniment of a harpsichord, a large guitar, a great lyre or viol di gamba, and a large lute; three flutes were also used in one pastoral scene. Monteverde's opera, Orfeo, at Mantua, in 1608, showed a great advance, for the orchestra contained two harpsichords, two bass viols, ten tenor viols, one double harp, two small French violins, then new, two large guitars, two "organs of wood," two viole di gamba, four trombones, one regal, two cornetti, one little octave flute, one clarion, and three muted trumpets. Notwithstanding the great display made on this and similar occasions, the real art of instrumentation long remained in an infantile condition. The sense of orchestral colour was not yet developed among musicians, and it required a full century to organize a permanent basis.

Successive stages have been as follows: (1) the period of Purcell, Bach, and Handel (1660-1750), strings in two, three, or four parts

reinforced by hautboys and bassoons, together with a background of harpsichord or organ tone, and occasional use of obligato wind parts; (2) the period of Haydn, Mozart, and Beethoven (1750-1827), when the strings were permanently established as the foundation of four-part harmony, with wood-wind, horns, trumpets, timpani, and trombones (somewhat rarely) for brilliancy and colouring; (3) the modern period since Beethoven's death, when there has been a gradual piling up of all available effects. The instruments named in the article Full Score sufficed for the greatest needs of the composers down to about 1850. Since then the numbers of these instruments have been increased, and cor anglais, saxophones, tenor tubas, and various other sound producers have been added. See the articles Instrumentation and Orchestra in The Oxford History of Music, ed. W. H. Hadow, 1901; and in The Dictionary of Music, G. Grove, 1904-10.

Orchestration or **INSTRUMENTATION**. In music, the art of planning music for the orchestra, allotting to each instrument its most suitable duties in view of both its tone and its technique. See Full Score; Instrumentation; Orchestral Band; consult also A Treatise on Modern Instrumentation, H. Berlioz, Eng. trans. M. C. Clarke, new ed. 1904.

Orchha or **URCHHA**. Native state and town in Bundelkhand, Central India. The state lies between the Jamm and Dhasan rivers between Jhansi and Chhatarpur. Its area is 2,080 sq. m. Pop. 330,000. The town, the former capital of the state, is situated on the Betwa. An imposing fortress is connected with the town by a wooden bridge. Pop. 4,000.

Orchid (*Orchidaceae*). Extensive natural order of herbs, growing in the ground or on trees (epiphytes). The terrestrial species have bunches of fleshy roots or tubers; the epiphytes often have the lower part of the stem much thickened (pseudo-bulb). The flowers are either solitary, or form spikes, sprays, or clusters. They are irregular, and consist of three coloured sepals and three petals, of which the two laterals are alike, but the third (labellum or lip) is usually larger, and the base often ends in a hollow spur. There is a single stamen, united with the style to form the column. The pollen forms pear-shaped masses (pollinia) whose stalk (caudicle) terminates in a sticky gland. The minute, spindle-shaped seeds are contained in a three-valved capsule. They are natives of all parts

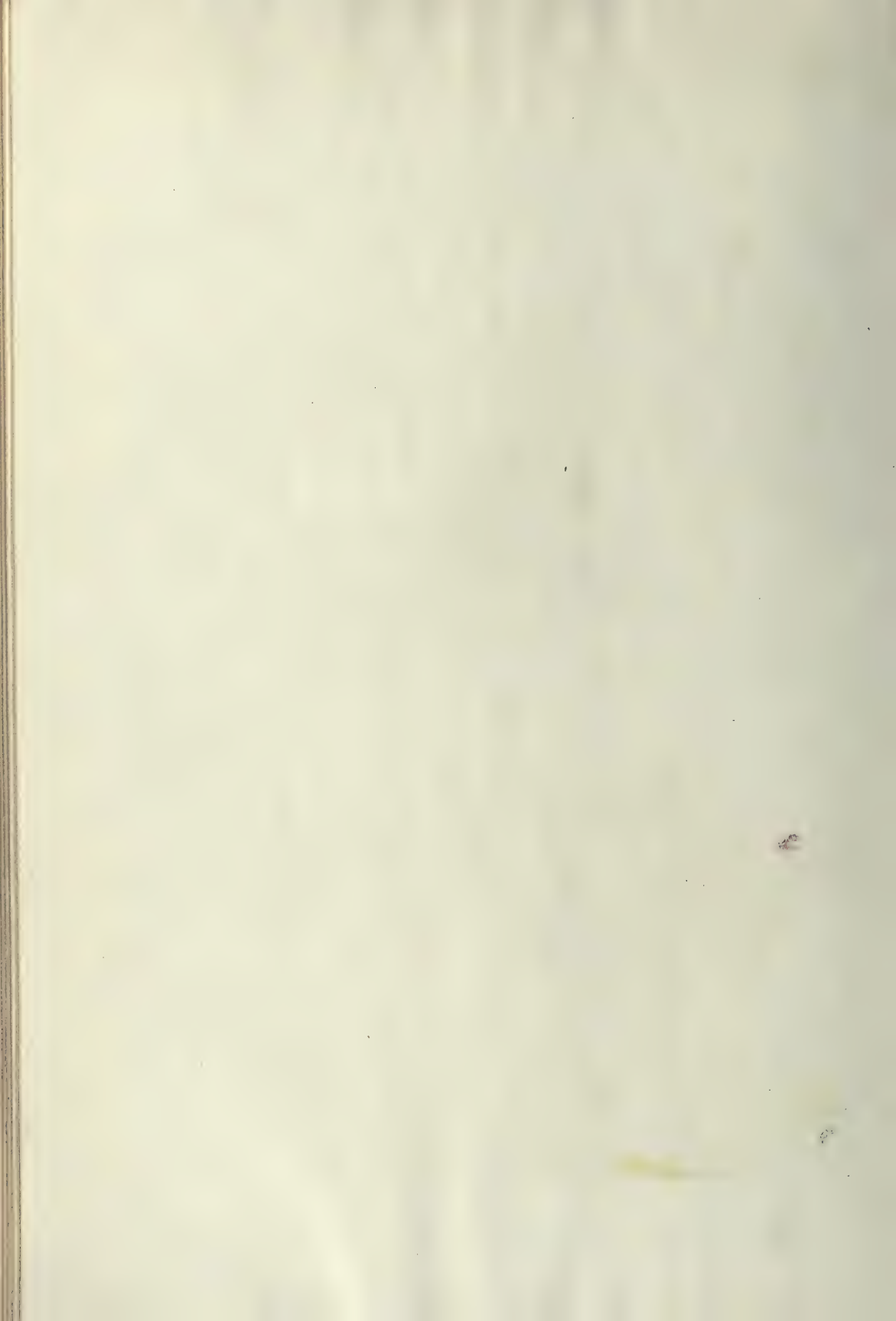


1. *Orchis maculata* (Spotted Orchis, Europe, N. Asia, Himalaya. 2. *Cypripedium sanderianum* (Sander's Lady's Slipper), Malayan Archipelago. 3. *Cattleya labrata*, variety *Dowiana*, Costa Rica. 4. *Paphiopedilum glaucophyllum*. 5. *Vanda sanderiana* (Sander's Vanda),

Philippines. 6. *Disa grandiniflora*, South Africa. 7. *Zygopetalum lawrenceanum*, Colombia. 8. *Oncidium papilio*, variety *maius*, Trinidad. 9. *Odontoglossum crispum*, variety *mundivatum*, Colombia. 10. *Miltonia spectabilis*, variety *Marebana*, Brazil.

ORCHID: RARE AND COMMON VARIETIES SHOWING FANTASTIC FORM AND COLOURING

Specially drawn for Harmsworth's Universal Encyclopedia by J. P. Campbell



of the world, with the exception of the coldest regions. The order includes over 400 genera, and about 5,000 species are known. A few hardy ones are natives of Britain, but most of the tropical species have been introduced since the year 1733.

For general culture orchids are usually divided into three groups, or divisions, according to the temperature of the house in which they will thrive best. These houses are known as East Indian, Intermediate, and Cool.

Epiphytal orchids usually reach Britain in the form of shrivelled pseudo-bulbs. They should be at once placed in a wet and warm atmosphere in small pans containing nothing but pieces of clean broken flowerpot. At first they should be given only enough water to keep the broken pieces of flowerpot moist. In a shady position, in a suitable temperature, the bulbs will soon swell up and roots begin to form. As soon as this stage arrives, the orchids should be potted up in a basket or pan containing equal parts of sphagnum moss and peat, with a small piece of charcoal and some pieces of broken flowerpot. Water should only be given in small quantities until the plants are well rooted.

Terrestrial orchids, which are usually grown in pots, thrive in many cases in ordinary soil, sometimes requiring a heavy loam in which ordinary pot plants would not flourish. The pots should be well and completely drained by means of potsherds and charcoal, or specially made orchid pots may be purchased. A safe mixture for the majority of terrestrial orchids consists of equal parts of peat and sphagnum moss, with a little silver sand and powdered charcoal. A supply of rainwater is advantageous to orchids, and, for plants in the cool house, it should be raised to a temperature level with that of the surrounding atmosphere before application. Water should be given freely in summer, less freely in winter.

A number of orchids are quite hardy in Britain. These include the genera *Ophrys* (q.v.), *Orchis*, and a number of species of the genus *Cypripedium*, or Lady's Slipper, of which the most striking variety, *C. spectabile*, is also known as the Mocassin flower. It is a native of N. America, and is almost equalled in hardiness and beauty by *C. calceolus*, the English Lady's Slipper. The flowers are various, brown, yellow, pink, and white in colour, and the flower stems attain a height of from 18 ins. to 2 ft. Hardy orchids thrive

best if planted out in a deep, rich, peaty soil, with a few lumps of grit mixed with the soil. They will also thrive in a turfy loam, with a moist subsoil, and deep planting is advisable. Few of the orchids have any scent.

For commercial purposes the Vanilla (q.v.), a house climber from Madagascar and the West Indies, is the most valuable of the



Orchid. 1. Green-veined orchid, *O. morio*. 2. Flower of Butterfly orchid, *Habenaria bifolia*. 3. Fragrant orchid, *Gymnadenia conopsea*

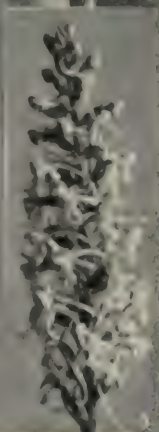
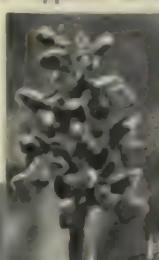
orchid family. See colour plate; also Lady's Slipper; Lady's Tresses; Laelia, etc; consult also Orchids: their Culture and Management, W. Watson and W. Bean, 1890.

Orchid, THE. Musical comedy, written by J. T. Tanner, composed by Ivan Caryll and Lionel Monckton, and produced at the Gaiety Theatre, London, Oct. 26, 1903, where it had a run of 559 performances. The cast included Gertie Millar, George Grossmith, junr., and Edmund Payne.

Orchis (Gr., testicle). Large genus—about 80 species—of herbs of the natural order Orchidaceae. They are natives of Europe and Asia, and a few of N. America. They have in most cases a pair of egg-shaped tubers, which suggested the old Greek name; in some species these are flattened with finger-like prolongations (palmate). The annual stem is wrapped around by the few strap-shaped leaves, which sometimes are spotted or blotched, and ends in a spike of irregular flowers, which by the twisting of the ovary are reversed.

There are about a dozen British species, of which the best known

are the early purple orchis (*O. mascula*) and the spotted orchis (*O. maculata*). The former, which appears in April in coopes and



pastures, has the typical oval tubers and the leaves spotted with purple-black. The flowers are red-purple, and the upper part of the stem takes on a similar coloration. The spotted orchis (*O. maculata*) has the tubers flattened, and the flower-spike more pyramidal, the flowers pale lilac marked with streaks and curved lines of purple. See Butterfly Orchis; Ophrys; Orchid.

Orcin OR ORCINOL. Solid hydrocarbon first prepared by Robiquet in 1829 from a lichen, *Variolaria dealbata*. From it the red dye archil (q.v.) is made. Orcin is used in the manufacture of litmus paper.

Orcus. In Roman mythology, the god of the lower world, subsequently identified with Hades or Pluto. Orcus is also used for the lower world itself. See Hades.

Orczy, EMMUSKA, BARONESS. British novelist and playwright. Born at Tarnaörs, Hungary, daughter of Baron Felix Orczy, she was educated at Brussels and studied painting in London. Turning to literature in 1900, she published *The Emperor's Candlesticks*, 1905,



Baroness Orczy. British novelist Russell

and a tale of the French Revolution *The Scarlet Pimpernel*, dramatised in collaboration with her husband, Montagu Barstow, and produced at the New Theatre, London, 1905. She also wrote *I Will Repay*, 1906; *Beau Brocade*, 1908 (dramatised, 1908); *The Elusive Pimpernel*, 1908; *Lord Tony's Wife*, 1917; and *The First Sir Percy*, 1920. Her play, *The Legion of Honour*, was produced at The Aldwych, London, in 1921. *Prosa*. Orchy.

Ordainers, LORDS. Body of 21 peers appointed in 1310, by a parliament consisting of peers only, to amend the unsatisfactory government of Edward II. It was arranged that they should administer affairs for 18 months and then formulate proposals. These proposals, known as the ordinances of 1311, secured the expulsion of Gaveston, the king's disreputable favourite, and of other foreigners, various limitations of the royal power, and the summoning of Parliament once a year. See Edward II; England: History.

Ordeal. Ancient form of trial *per Dei judicium*, by judgement of God. The underlying belief that Divine providence would intervene to protect the innocent from unjust condemnation is of remote antiquity and universal distribution. A test of innocence of infidelity by drinking bitter water mixed with dust from the floor of the tabernacle (Numbers 5) shows that the practice was in use among the Jews. That it obtained among the ancient Greeks is proved by a passage in Sophocles' *Antigonē*, where the watchman protests his readiness to hold red hot iron in his hand and walk through fire, to prove his innocence of Cleon's charge of having given Polynices proper burial.

Among the Anglo-Saxons the test generally took one of four forms: ordeal by battle; ordeal by fire—either by handling hot iron, or walking blindfold and barefoot over red hot ploughshares placed at irregular intervals; by hot water, when the suspect plunged his arm up to the elbow into boiling water; or by cold water, when the suspect was flung into a stream or pond and, making no effort to swim, either sank, when he was deemed innocent, or floated, in which case he was convicted and punished.

Legal ordeals were abolished in England under Henry III, with the exception of trial by battle, which actually survived on the statute book until 1818, when it was abolished in consequence of the right to trial by battle being claimed by a man charged with murder. Swimming, or floating, was the common method of testing witches until the 18th century, the women being bound right thumb to left toe and left thumb to right toe, in which position they could not keep themselves afloat, and were left to the judgement of heaven. See Divination; Duel: Trial by Battle.

Ordeal Bean (*Physostigma venenosum*). Perennial climbing herb of the natural order Legumi-

nosae, native of tropical Africa. The leaves are broken into three leaflets. The purple, bean-like flowers are in sprays, and are succeeded by dark-brown pods containing two or three large blackish



Ordeal Bean: foliage and flowers. Inset, seeds, showing the hilum or deep groove

or brown seeds with a deep groove (hilum) along one side and around one end. These seeds are extremely poisonous, and are employed by the natives of Old Calabar as an ordeal for those suspected of witchcraft. The suspect has to eat beans until he vomits and so prove his innocence, or he dies, and so proves his guilt. It has been found useful in ophthalmic surgery for contraction of the pupil of the eye.

Ordeal of Richard Feverel. THE. Novel by George Meredith (*q.v.*), first published in 1859 with the sub-title of *A History of Father and Son*. The earliest of its author's series of fiction studies of modern life, this story is by some critics regarded as on the whole the greatest of them. Its theme is the danger of applying academic theories to education for practical life. The story represents the best qualities of Meredith as a novelist, his wit, humour, poetry, and rare skill in psychological analysis.

Order (Lat. *ordiri*, to begin). Word used in several senses. Its prime meaning is that of a series or row, hence an order or regular arrangement. From this came the idea of obedience, and so we have the use of the word for a command.

To-day an order means a class of persons united together in some way. Such are the orders of knighthood and other orders of the same kind, which do not carry the honour of knighthood, the order of merit, for instance, and the monastic and other religious and semi-religious orders. (See Knighthood; Merit, Order of; S. John of Jerusalem; Templars, etc.)

In the sense of a command the word is frequent in military and naval language, for instance, close order, fighting order, sealed orders, etc. The same idea is seen in

ecclesiastical matters, the order of service and the phrases Holy Orders and minor orders being examples. It is the same in business, in such phrases as payable to order. In a related sense order implies good and peaceable conditions, *e.g.* public order and to maintain order. (See Holy Orders.)

In natural science, especially in zoology and botany, an order refers to a number of genera having important points in common. It is thus intermediate between a class and a family. In architecture, an order is one of the different ways in which the column, with its various parts and its entablature, are moulded and related to each other. There are three main orders, Doric, Ionic, and Corinthian, and two minor ones, Tuscan and Composite. See Architecture; Column; Corinthian Order; Doric Order, etc.

Ordericus Vitalis (1075–1142). Medieval chronicler. Born near Shrewsbury, England, Feb. 16, 1075, the son of a French priest and an English mother, he passed the greater part of his life in the Norman monastery of St. Evroul. About 1123 he began to write the history of the monastery, but this was soon expanded into a general history, although described as *Historia Ecclesiastica* only. He had good sources of information about England as well as France, and the part of his work which deals with his own age, the eighty years after the Norman conquest, is a valuable contribution to the history of the two countries. It has been edited by French scholars and translated into English.

Order-in-Council. In the United Kingdom, and also in Canada, Australia, and other parts of the British Empire, an order issued by the sovereign on the advice of the privy council. It is thus a method of legislation, having taken the place of the proclamations issued by the Tudor and later sovereigns.

The place of orders-in-council in the parliamentary system is maintained by a fiction. Theoretically they are issued by the advice of the privy council, but in practice, on the advice of only a few of its members, who are also members of the Government, and as such responsible to Parliament. These orders were first issued in the 18th century, and a notable instance was in 1807–8, when by them all vessels were forbidden to trade with ports under French control. (See Berlin Decree.) They were extensively used during the Great War, especially for matters of urgency. Orders-in-Council are used to carry out Acts of Parliament. Towards

the end of the nineteenth century, owing to the mass of new legislation, the custom sprang up of drafting Acts of Parliament in very general terms, giving very extensive powers to ministries to formulate the details as they thought best, and carry them out by issuing orders-in-council.

Orderly. Name given in the British army to a private soldier who serves as a messenger, attendant, or in a like capacity. Orderlies are attached to the headquarters of battalions, brigades, etc., for these purposes; others are in attendance on officers for similar duties. A squadron, company, and battery has its orderly sergeant and orderly corporal, and military hospitals have hospital orderlies. The orderly officer is the name given to the subaltern who is on duty for the day.

Ordinal Numbers. Name given to those words used to indicate the position of something in a sequence. First, second, third, etc., are ordinal numbers. One, two, three, etc., are called cardinal numbers, though the latter are also used as ordinals, e.g. in numbering the pages of a book.

Ordinance (Fr. *ordonnance*). Edict issued by authority. Specifically, the term is applied in Great Britain to an Act of Parliament not sanctioned by all three estates of the realm, e.g. the self-denying ordinance (q.v.) passed by the Long Parliament in 1645 at Cromwell's instigation. Temporary Acts of Parliament and Acts which are merely declaratory are also called ordinances. The edicts issued by the kings of France from the time of Philip IV until the Revolution in their own name, and having the force of laws, were termed *ordonnances*. The ordinances affecting the press and the reconstruction of the Chamber of Deputies issued by Charles X, July 26, 1830, were the immediate cause of the revolution and his enforced abdication, Aug. 2, 1830. In its connotation of an established rule or rite the word ordinance is also used, especially by Presbyterians, of the sacraments, as the ordinance of baptism. See Ordainers, Lords.

Ordinary. In heraldry, the commonest charge. They are mostly plain symbols, composed of broad bands. They are among those found on the earliest feudal coats, and by old writers are referred to as the "honourable ordinaries." They are supposed to occupy one-third of the shield, but generally are given rather less space. Most of the ordinaries have "diminutives," usually smaller representations of the parent charge. The first diminutive occupies half the

space of the ordinary, and so they diminish by half at each step.

The names of the ordinaries are chief, pale, or paller, bend, bend sinister, fess or fesse, chevron, cross, saltire, quarter, and pile.

All ordinaries and most of their diminutives may be charged, i.e. ornamented with another ordinary, a diminutive, or some other figure; and they can also be "surmounted," i.e. another ordinary, or an animal or monster, may be placed over them. On the other hand, an ordinary may surmount some ordinary charge. Most of them may be "voided," i.e. only a border is shown, the tincture of the field showing between. See Heraldry, colour plate.

Ordinary. In ecclesiastical law, an ecclesiastic who exercises jurisdiction within a given district. In England it usually means the bishop of the diocese or his chancellor acting by his authority. The expression Ordinary of the Mass means the fixed portion of the service as distinguished from the variable parts—such as collects, gospels, etc.—proper to special occasions. In common parlance, it is applied to the service generally, with the exception of the canon, which consists of the prayer of consecration and its adjuncts. See Bishop.

Ordinate. In mathematics, the length of the straight line drawn from any point parallel to one of a pair of Cartesian coordinate axes, to meet the other axis. See Coordinates.

Ordination. Ecclesiastical rite in which Holy Orders are conferred upon deacons and priests. In the Greek, Roman, and Anglican communions the rite includes the laying on of hands by a duly consecrated bishop; in the Presbyterian churches the ordination is by the Presbytery. The subject is one of great controversy associated with the Apostolic Succession (q.v.).

Since the beginning of the 17th century the validity of Anglican orders has been contested by the Roman Catholic Church. On Sept. 18, 1896, Leo XIII issued a Bull, *Apostolicae Curae*, pronouncing that ordinations performed by the Anglican rite have been and are utterly invalid and altogether void; to which Archbishops Temple and MacLagan replied, Feb. 19, 1897. For some 40 years the Anglican succession derived from Matthew Parker (q.v.), and a crucial point of the controversy is the validity of his consecration.

Deacons and priests are ordained on the four Sundays following the Ember Weeks, the canonical ages being 23 for deacons and 24

for priests. Ordination is a sacrament in the Greek and Roman churches. See Holy Orders; Thirty-Nine Articles; consult also the English Book of Common Prayer; Ordination Problems, S.P.C.K., 1909.

Ordnance. General designation of all guns, howitzers, and firearms of larger calibre than small arms. Ordnance may be broadly divided into guns and howitzers, the former being long weapons throwing a projectile to a great range at a high velocity, and the latter shorter, of much lighter construction, using a smaller propellant charge, and so imparting only a low velocity to the projectile, which attains its range by means of a high trajectory. In calibre, the weapons in general use range from about 1½ ins. to 18 ins., but a 20½ in. weapon was used during the Great War. Except trench howitzers and bomb throwers, all modern ordnance are rifled and provided with breech-loading mechanism, but despite the latter fact are classified as breech-loading (B.L.) and quick-firing (Q.F.).

The two chief principles on which the barrels of ordnance are constructed are by winding a great length of wire uniformly around the inner tube and shrinking a jacket over it, and by building up the barrel by shrinking several tubes over each other. The great advantage of wire winding is that it enables the bursting strain to be resisted by steel in longitudinal tension instead of transverse, the metal being far more tenacious in this direction. Breech-closing mechanism employs either the principle of an interrupted screw or sliding wedge, but with the latter perfect sealing cannot be attained, and it is essential that the weapon should employ Q.F. type ammunition, whereas the interrupted screw is applicable to either the B.L. or Q.F. systems, perfect sealing in the former case being obtained by using an obturator.

In recent times great advances have been made in absorbing the recoil from ordnance, the systems including spring buffers, air compression, and the propulsion of liquids through restricted orifices, or combinations of these. This is a matter of the greatest importance, as not only does effective absorption of the recoil result in far less stress being transmitted to the gun mounting, whether a wheeled carriage or a turret fixture, but, in the case of field guns, enables a number of successive shots to be accurately fired at the same target without relaying, as the carriage is not disturbed by the discharge of the piece. Trench

mortars, trench howitzers, and bomb throwers constitute what is practically a distinctive class of ordnance in that extreme simplicity and light weight are factors of first importance. On this account many of these weapons are smooth-bore muzzle-loaders, the barrel consisting of a simple weldless steel tube, and there is no provision for recoil absorption. In order to obtain the greater accuracy of a spinning projectile without rifling the barrel, the shell for these weapons are frequently provided with metal tails, the vanes of which are set at an angle, so causing the shell to rotate on its major axis as it travels through the air. As a rule the propellant charge is secured to the tail of the shell, and may be automatically fired as the bomb drops to the breech end of the barrel.

In army organization, the term ordnance formerly embraced the engineers and artillery and all their equipment, but now is confined to the latter branch and their stores. The master-general at the war office controls the artillery and fortifications, but the duties of the army ordnance department include the provision, storage, distribution, and maintenance of arms and ammunition of all kinds, personal and camp equipment, vehicles, harness, and saddlery, horseshoes, signalling stores, telegraphic, barrack, hospital and miscellaneous stores, bridging material, stationery, etc. The A.O.D. also supplied naval requirements in the way of arms and ammunition, but this is now undertaken by naval establishments under the control of the director of armament supply, the technical branch being controlled by the director of naval ordnance. The naval armament depots are at Priddy's Hard (Portsmouth), Lodge Hill (Chatham), Bull Point (Plymouth), and Combie (Rosyth). See Ammunition; Army Ordnance Corps; Artillery; Breech Block; Fire-arm; Guns; Howitzer; Machine Gun; Obturator; Pom-Pom; Rifle; Trench Howitzer.

Ordnance Artificer. Non-commissioned officer of the British navy. The branch to which they belong was established in Dec., 1919, to provide a force to care for and maintain the naval gun armament. It took over the work then being performed by the armourer branch and the turret engine-room artificers. The ranks of ordnance lieutenant-commander, ordnance lieutenant, commissioned ordnance officer, and warrant ordnance officer were authorised. Men were enrolled as chief ordnance artificer

(1st and 2nd class), and ordnance artificer (1st-4th class). The pay ranged from 7s. 11d. per day for 1st class chief ordnance artificer to 5s. 11d. per day for 4th class ordnance artificer. These ratings were given the status of chief petty officer. See Armour, Naval; Armourer; Artificer.

Ordnance Board. Former name of a body of artillery experts attached to the British war department who were responsible for the design and investigation of weapons and ammunition. This body is now styled the Ordnance Committee. Similar bodies of experts are maintained by all the great powers.

Ordnance College. Establishment at Woolwich similar to a staff college where officers are trained in the duties of the ordnance department. Those who qualify as ordnance officers at the final examination are distinguished in the Army List by an O. A course of instruction at this college for five months is the preliminary to admission to the school of gunnery at Shoeburyness (*g.u.*) for officers of the Royal Garrison Artillery who wish to qualify as instructors in gunnery. The Woolwich curriculum embraces the theory of gunnery, and instruction about ammunition and machinery, and lectures on optics, position finding, and range finding.

Ordnance Committee. British advisory committee of experts in artillery and gunnery. Officers from all three services are detailed to act on the committee, which also includes civilian scientists and meets regularly at its headquarters in the Royal Arsenal, Woolwich. Its decisions are referred to the director of artillery (war office), the director of naval ordnance (admiralty), and the director of armament (Royal Air Force).

Its normal functions are to consider inventions relating to both weapons and ammunition, suggest suitable designs for specific purposes, investigate failures and accidents, and advise the authorities on all questions of ordnance manufacture and practice.

Ordnance Survey. Topographical survey of the United Kingdom. In 1747, following the Jacobite rebellion of 1745, General Watson organized the making of a map of the Highlands, but the ordnance survey cannot be said to have come into existence until 1784, when General Roy measured a base line on Hounslow Heath.

At first all the work was carried out on the scale of 1 in. to 1 m., but in 1824 mapping on the 6-in. scale was begun. Later, in 1854,

the map of Great Britain on the scale of 1/2,500, approximately 25 ins. to the mile, was begun, and in 1895 work on the same scale was taken up in Ireland. Classifying the ordnance survey maps according to their scales, the largest scale maps are the cadastral maps on the scales of 1/2,500 and 1/10,560, i.e. the 25-in. and 6-in. maps, and the 5 ft. and 10 ft. to the mile maps. The cadastral maps, since they show boundaries of properties and individual buildings, are of great value in local administration, for the control of estates and property, and for general detailed work of all kinds. The 6-in. map is a reduction of the 25-in. The 5 ft. and 10 ft. to the mile maps are city and town plans, and since 1892 have been produced only when the towns concerned bear part of the cost of survey.

The maps on the scales of 1/63,360, 1/126,720 and 1/253,440, i.e. the 1-in., 1/2-in., and 1/4-in. maps respectively, may be termed topographical maps. They show the natural features of the country, as well as towns and villages, railways, roads, canals, bridges, telegraph lines, etc. Unlike the cadastral maps, they do not show the property boundaries, but they are the best maps for travel or for war operations. The best known is the 1-in. map, the standard British topographical map. It is issued in three forms, of which that printed in colour and showing relief by means of contours and hachures is perhaps the best example of a British ordnance map. The smallest scale maps are the 1/633,600 and 1/1,000,000. These are the best maps for use when details are not required, i.e. for strategical or general purposes. See Maps and Map Making.

Ordovices. Celtic tribe inhabiting a large part of N. Wales at the time of the Roman occupation of Britain and subdued by Agricola in the first century of our era.

Ordovician. In geology, name given to the period following the Cambrian and preceding the Upper Silurian. The rocks of this period, named after the Ordovices, are found in Great Britain, Europe, Asia, N. and S. America, and Australia, but are not known in Africa. They consist of grits or greywackes, shales and limestones, and provide valuable building stones, including slates and marbles. The rocks are typical in Wales, giving to the country much of its picturesque and rugged scenery. The Ordovician rocks of N. America, in Ohio and Indiana, are sources of petroleum and natural gas,

while iron, zinc, lead, silver, and graphite are found in British and other Ordovician rocks. Many fossil remains are found of this period, notably graptolites, foraminifera, corals, star-fishes, trilobites, brachiopods, gastropods, etc. Except for fishes, however, the remains of vertebrates are absent. *See Geology; Rocks.*

Öre. Bronze coin of Denmark, Sweden, and Norway; the one-hundredth part of a krone (*q.v.*).



Öre, Scandinavian bronze coin, actual size

It is coined in bronze as one-öre, two-, and five-öre pieces; and in silver as 10-, 25-, and 50-öre pieces.

Ore. Mineral or rock mass containing one or more metals. The term is only applied to such masses if the metals are present in quantity and form calculated to make their extraction a profitable operation. Thus, granite rock contains much potassium, and common clay much aluminium, but neither is regarded as an ore on that account, because, with our present knowledge, it would not pay to extract the metal.

The value of an ore depends on the proportion of the metal or metals present and the exact forms in which they occur, which latter circumstance will determine the ease or difficulty with which the metals can be extracted—that is to say, the cost of recovery. The payable proportion varies immensely; thus ores containing less than 1 oz. of gold to the ton are being worked profitably to-day, but a mineral carrying less than 30 p.c. of iron would rarely be worked for that metal. Iron, lead, or zinc ores containing 50 p.c. of metal, and copper ores carrying 25 p.c. metal are rich; while normal tin ore (tin oxide) may have over 75 p.c. metal. *See Metallurgy; Metal; and names of metals.*

Örebro. Town of Sweden, capital of the län or co. of the same name. It is a port of inland navigation at the W. end of Lake Hjälmars, 104 m. W. of Stockholm, and exports minerals from the local iron, silver, and copper mines and the tobacco, matches, paper, boots and shoes, and machinery manufactured in the town. An important rly. junction with a connexion to Christiania, it has the chief state rly. workshops. The ancient castle, now used as a museum, is in the section of the town built on an island in the Svarta Elf river; the

town hall and an old church are other buildings of note. There is a state technical college. The town was long the place of assembly of the Swedish diet, which, in 1529, made Lutheranism the state religion. Pop. 34,000.

Ore Deposits. In mineralogy, natural accumulations of metalliferous minerals in the earth's crust. The metallic ores are only occasionally found pure, being generally in the form of oxides, sulphides, sulphates, carbonates, silicates, etc., the most noted exceptions being gold and platinum found in their natural state. Mixed with the valuable metal ores are minerals, usually not worth mining, and known as gangue. Such gangue constituents are quartz, felspar, hornblende, calcite, etc.

Ore deposits occur with most metals except iron, in the form of veins and lodes. These veins are caused by the filling up of fissures in the rocks by metallic deposits, and from the nature of the action the veins themselves may be a mixture of several metals or metals and gangue. The veins may be practically any shape or run in any direction, and be definite and clear cut or ill-defined, according to the nature of the parent rock. Such vein deposits may vary in thickness from an inch to hundreds of feet.

Ores may occur more or less evenly distributed throughout certain rocks, particularly igneous rocks, or appear as insoluble segregation separated out from the molten rock. Alluvial or placer deposits are another form of ore which have in the past produced valuable finds, particularly of gold and tin. Such deposits are caused by the action of running water. *See Gold; Iron; Mining; Silver, etc.*

Oregon. Name by which the river Columbia (*q.v.*), N. America, was first known.

Oregon. Western maritime state of the U.S.A. The surface is extremely diversified. In the mountainous W., the Coast Range separates the rocky coast from the fertile valleys of the Willamette and Umpqua rivers, which are enclosed on the E. by the Cascade Range, containing many extinct volcanoes and snow-capped peaks, the highest of which is Mt. Hood, 11,225 ft. Further E. lies an undulating prairie, scored by valleys and relieved by numerous mountains, and in the N.E. rise the Blue Mountains. The Columbia river marks most of the N. frontier, and the Snake river a large part of the E. frontier, their valleys providing an extensive tract of fertile land.

The climate of W. Oregon is generally mild and healthy, but farther

E. there is a scarcity of rain, and an extremely wide range of temperature. Over a large area in the S. there is no river drainage owing to evaporation. Irrigation projects are in progress. Wheat, hay, potatoes, hops, and various fruits are produced, and the fisheries and stock-raising are valuable industries. Gold, coal, silver, and other minerals are worked, while the manufactures are chiefly associated with land products and the fisheries. Oregon ranks fifth among the states in the production of lumber. There is a state university at Eugene, and an agricultural college at Corvallis. The length of the railways exceeds 3,000 m.

Salem is the capital, and Portland is the commercial centre. Two senators and two representatives are sent to Congress. Woman suffrage was adopted in 1912. Washington and Idaho, as well as parts of Montana and Wyoming, were originally included in Oregon, the possession of which was long disputed between Great Britain and the U.S.A. It was jointly occupied 1818-46, when the frontier was fixed at 49°. The state was formed out of the territory in 1859. Area, 96,699 sq. m. Pop. 783,000. *See History of Oregon, H. S. Lyman, 1903; History of the Pacific Northwest, J. Shafer, 1917.*

Oréide or **Oroide** (Fr. *or*, gold; Gr. *eidos*, form). Brass introduced in France as a substitute for gold in the manufacture of jewelry. Its composition is usually copper 85.5, zinc 14.5 parts, and its colour closely resembles that of real gold. It takes a fine polish, is ductile and tenacious, and can be readily stamped, rolled, or worked. When tarnished, its lustre may be renewed by washing with weak acid solution.

O'Reilly, JOHN BOYLE (1844-90). Irish-American poet and journalist. Born at Dowth Castle,



co. Meath, June 28, 1844, he joined the Fenian society, and in 1863 enlisted in the British army in order to induce the soldiers to revolt. Tried for high treason in 1866, and sentenced to be shot, the sentence was commuted to 20 years' penal servitude in Australia. Having managed to escape to America in 1869, he settled at Boston, where he became editor of *The Pilot*, and published several works in verse and prose. He died at Hull, Mass., Aug. 10, 1890.

Orel. Govt. of Central Russia. It is bounded N., by the govts. of Kaluga and Tula, on the E. by Tambov and Voronezh, S. by Kursk, and W. by Smolensk and Chernigov. Its soil is very fertile and the rearing of livestock, especially horses, is extensive. Grain, hemp, oil, and leather are the chief exports. The district is watered by the rivers Don, Oka, and Desna. Area 18,042 sq. m. Pop. 2,816,000.

Orel. Town of Central Russia, and capital of the govt. of the same name. It stands at the junction of the rivers Oka and Orlik, 170 m. N.W. of Voronezh. A commercial centre, it owes its importance to its position where four lines of rly. meet, and to the facilities for transport on the Oka. Pop. 91,000.

O'Rell, Max. Pen-name of Paul Blouet (1848-1903). French author. Born in Brittany, March 2, 1848, he



Max O'Rell,
French author

took part in the Franco-Prussian War, settled in England as a newspaper correspondent, and was French master at S. Paul's School, London, 1876-84. He made a

name with John Bull and His Island, followed by similar books on Scotland, America, and France. He died in Paris, May 24, 1903.

Orenburg. Govt. of Russia. Situated partly in Europe, partly in Asia, its area is 73,254 sq. m. It is divided into E. and W. dists. by the Ural Mts. The soil is generally fertile, and the mineral wealth considerable. The chief industries are



Orenburg. The main street of the Russian town

distilling, tanning, and tallow-boiling. The most important article of commerce is salt. Pop. 2,272,000.

Orenburg. Town of Russia and capital of the govt. of the same name. It stands on the right bank of the river Ural, and on the Orenburg-Tashkent railway. It has manufactures of soap, candles, and

hardware, and is a centre for the wares of Asia and Northern Europe. Pop. 94,000.

Orense. Inland prov. of N.W. Spain, bounded S. and W. by Portugal. It is traversed by the Miño, and watered by the Limia and smaller streams. Almost wholly mountainous, its climate is generally mild, but cold and damp in the hills. In the valleys fruits, including figs, oranges, almonds, and olives, are grown. In the uplands timber trees abound, walnut and chestnut predominating. Some iron is mined, and fine cattle are reared on the pastures. Orense formed part of the old kingdom of Galicia. Area, 2,694 sq. m. Pop. 416,000.

Orense (anc. *Aurium*). City of Spain, capital of the prov. of Orense. It stands on the Miño river, 45 m. N.E. of Vigo on the Monforte-Tuy Rly. The river is here spanned by a bridge, 1,320 ft. long and 135 ft. high, built by Bishop Lorenzo in 1230. The Gothic cathedral, dating from 1220, has been damaged by earthquake. At the foot of the hill on which Orense stands are the warm sulphur springs of Las Bargas, and in the vicinity are the baths of Caldas de Orense, known to the Romans. Its bishopric was founded in the 5th century. The place is noted for its hams, and it manufactures chocolate, textiles, and leather. Iron founding and flour and saw milling are other industries. Pop. 16,000.

Orestes. In Greek legend, son of Agamemnon and Clytemnestra. When his father was murdered, Orestes was saved from a like fate by his sister, Electra, who sent him to Phocis, where he became an intimate friend of the king's son, Pylades. Having slain his father's murderers, he was pursued by the Furies, until his acquittal by the court of the Areopagus, at Athens. According to another legend, he went for purification accompanied by his friend, Pylades, to the country of the Tauri (Crimea) to fetch from there a statue of the goddess Artemis,

returning with his sister, Iphigenia to Argos, where Orestes reigned over his father's kingdom at Mycenae. See Agamemnon; Areopagus; Choephoroi; Electra; Eumenides; Iphigenia.

Orford, EARL OF. British title born in turn by the families of Russell and Walpole. In 1697 the



Orense, Spain. Portico of the main entrance to the cathedral of S. Martin

seaman, Edward Russell, was created earl of Orford, but the title became extinct on his death in 1727. In 1742 the statesman, Sir Robert Walpole, was made earl of Orford. The title passed to his son and grandson, and, when the latter died without sons in 1791, to Sir Robert's youngest son, the famous Horace. It became extinct on his death in 1797. In 1806 his cousin Horatio, Baron Walpole, was created earl of Orford, and the title is still held by his descendant. Houghton Hall and the estates in Norfolk passed away from the title when Horace Walpole died. The earl's seat is Wolterton Park, Norwich. See Walpole, Horace; Walpole, Sir R.

Orford, EDWARD RUSSELL, EARL OF (1653-1727). Nephew of William, 1st duke of Bedford, he

entered the navy and actively supported William of Orange, who made him admiral and treasurer of the navy, 1689. Although intriguing with James Stuart, he engaged the French fleet and gained a signal victory at the battle of La Hogue (q.v.), May 19, 1692. Suspicions of his loyalty led to his dismissal, but, reinstated in 1693, he commanded the Mediterranean fleet, 1694-95, and was first lord of the admiralty, 1694-99, 1709-10, and 1714-17. He was made earl of Orford, 1697; the title lapsed on his death, Nov. 26, 1727.



Earl of Orford,
British sailor

THE ORGAN AND ITS MECHANISM

B. C. Bairstow, Mus.D., F.R.C.O., Organist of York Minster

This encyclopædia contains articles on the musical instruments of importance; e.g. Flute; Piano-forte; Violin, etc. See also Harmony; Music; and biographies of Bridge and other leading organists

The organ is the largest and most powerful of musical instruments. It has the advantage of many tone qualities, but the disadvantages of an unsensitive touch and the fact that all expression is obtained from it by mechanical means. It has anything from one to five keyboards or manuals, a pedal keyboard, and numbers of stops, in large organs more than a hundred. The draw-knobs controlling the stops are arranged in vertical rows on both sides of the manuals, and there are various accessories to assist in the manipulation of the draw-knobs.

A speaking-stop consists of a pipe of the same timbre for every note on the keyboard, 61 pipes on an organ of full compass—CC to c^{'''}. The pitch of the pedal keyboard is an octave below that of the manuals. The pedal keys are of wood and very large; the compass is from CCC to f, sounding an octave lower than the lowest note on keyboards. There are other draw-knobs called couplers, controlling appliances for coupling the manuals to the pedals and to each other, so that keys depressed on one keyboard sound the corresponding notes or octaves on that to which they are coupled. The length of a pipe governs its pitch, and the shape its quality.

A pipe sounding CC is approximately 8 ft. in length, and a stop sounding the notes as printed is known as an 8 ft. stop. Those of 16 ft. sound an octave below what is printed; those of 4 ft. an octave above. The 8 ft. stops give the instrument its breadth and dignity; they out-number those of any other single pitch. 16 ft. stops are chiefly found on the pedal keyboard; they fulfil much the same functions as the double basses in the orchestra. 32 ft. stops are included in large organs. The 4 ft. and 2 ft. stops add brilliance.

Varieties of Pipes

Pipes are divided into two main groups, flues and reeds. The flues, diapasons, flutes, etc., made of wood or metal, sound on the same principle as a tin whistle. The front pipes of an organ belong to this group. The air in a reed pipe, usually made of metal, is put in vibration by wind forced between a semi-cylindrical tube and a brass tongue covering its open side; this is placed in the foot of the pipe. A flue pipe with its upper end closed by a stopper

sounds an octave lower than an open pipe of the same length. Harmonic pipes, reed or flue, are so treated as to sound their first harmonic, that is, an octave higher than an ordinary open pipe of the same length.

The manuals each have separate functions. The most important, Great Organ, contains the loud stops, flues, and reeds, of all pitches. The pipes of that situated immediately above, Swell Organ, are enclosed in a wooden box, one side of which consists of Venetian shutters, opened and closed by means of a pedal, thus creating a crescendo and diminuendo. It has stops of similar variety and as comprehensive in character as the Great Organ. That situated nearest the player, when there are three, Choir Organ, has assigned to it stops of soft and delicate quality. The fourth manual, solo organ, contains the stops imitating orchestral instruments—strings, wood-wind, and brass. Occasionally organs have a fifth manual, Echo Organ, the pipes of which are placed at a distance from the rest of the instrument. The choir, solo, and echo organs are often enclosed in swell boxes. This description of the manuals applies only to British organs.

Mechanical Wind Supply

Only small organs can be blown by hand: the demand for different wind pressures and the use of pneumatic action make it imperative that larger organs should have some form of motor—combustion, hydraulic, or electric—to supply wind. Electric motors are the cheapest and best.

In the 11th century men were already acquainted with the art of manipulating the opening at the lower end of the pipe in order to alter its quality and power of tone. At this time also the key was improved. Under each pipe a valve or pallet was placed, held closed by a spring. A cord joined the valve to the key, which, when depressed, opened the valve and allowed wind to pass into the pipe. Afterwards the cord was superseded by a system of wooden levers, or trackers, and keys, from being four inches from centre to centre, gradually assumed their modern proportions.

In the 15th century organs were made with more than one manual; the pedal keyboard was added; draw-knobs came into use, but in

very primitive form. It was not until the 16th cent. that the present system of stop control was initiated. Sliders were re-introduced, but this time they ran lengthwise to the rank of pipes, above the pallets, and had as many holes as there were pipes in the rank. Draw-knobs were placed at the sides of the manuals, and, when these were drawn, levers moved the sliders until the holes came under the pipes.

After the invention of the swell, by Jordan in 1712, no important innovation is found until the 19th century. The invention of composition pedals by Bishop, in 1809, revolutionised stop control. These are iron pedals placed above the pedal keyboard. When depressed they draw certain stops and take in others, each pedal having a fixed combination of stops. The size to which organs had now grown and the demand for the performance of rapid and difficult passages made it necessary to find some improvement upon the heavy and noisy tracker key mechanism. This was first achieved by pneumatic lever action discovered by Barker in 1832.

Pneumatic Action

The keys, on being depressed, operated valves, admitting compressed air from a wind reservoir to V-shaped motor bellows. One side of these was fixed, the other expanded, and to the movable side was attached the tracker action. This lightened the touch enormously, but was slow in attack and release, and the clattering trackers were still in evidence. Tubular pneumatic action, the work of Moitessier, in 1835, largely developed by Henry Willis and successfully applied to the organ in St. Paul's Cathedral in 1874, eventually overcame these difficulties. In this action the key operates a valve, admitting compressed air to tubes which transmit the power to other valves moving the pallets. A still prompter action is electro-pneumatic, where electric current conveyed through small wires takes the place of the tubes. The depression of the key simply closes an electric circuit operating magnets which, by means of pneumatic valves, open the pallets.

Never quite reliable until the close of the 19th century, it is now used by all the principal builders where organs, or parts of them, are at a great distance from the keyboards. Pistons are ivory buttons placed just underneath the manuals; they have the same functions as composition pedals. Either tubular or electro-pneumatic action is now applied to the stop action, composition pedals, and pistons. With adjustable pistons the

organist can vary at will the combination of stops which are actuated by them.

The artistic side of organ building, the voicing of pipes, their relative scale, the materials from which they are made, and the various wind pressures with which they are supplied, has of late years made great strides, and more beautiful and varied tone-colours have been evolved by the great builders. The movement may be said to have begun with the Restoration. Bernhard Schmidt, known as Father Smith, built the organ for Charles II's chapel, and he and his rival Renatus Harris erected many fine instruments. See *A Handbook of the Organ*, J. Matthew, 1897; *The Story of the Organ*, C. F. Abdy Williams, 1903; *Modern Organ Building*, W. and T. Lewis, 1911.

Organic Chemistry. Term applied to the branch of chemistry dealing with the products of animal and vegetable organisms. The term has become to some extent restricted to the study of carbon and hydrogen compounds and their derivatives. See Carbon; Chemistry; Hydrocarbon.

Organism. Living plant or animal, the chief constituent of which is protoplasm. Organic substances differ from inorganic, *e.g.* mineral substances, as possessing life in some form. See Biology; Cell; Protoplasm.

Organists, ROYAL COLLEGE OF. Society founded in 1864 for the furtherance of the interests of the profession of organist, and of church music generally. It conducts examinations, and keeps in touch with its members through the monthly journal, *The Musical Times*. Lectures are given in London and the country from time to time. The college, long associated with Hart Street, Bloomsbury, now occupies the building in Kensington Gore, erected in 1876 for the national training school, and used by the Royal College of Music, 1882-94. It received a royal charter in 1893.

Orgeiev. Town of Rumania. It is in Bessarabia, 25 m. N. of Kishinev, on the Reut. The chief industries are the making of tobacco, candles, and bricks, tanning, and dyeing. Its limestone quarries are famous. Part of the town is built over the site of a Dacian fortress. Pop. 18,000.

Oriel (late Lat. *oriolum*, small room, recess). In architecture, term usually applied to a bay window corbelled out from the wall of an upper floor, or over a porch, but formerly extended to a bay window on the ground floor. A conspicuous feature of Tudor

architecture, it became common about the middle of the 15th century. See Gothic Architecture.

Oriel College. College of Oxford University. Founded in 1326 by Adam de Browne, a servant of Edward II, and dedicated to S. Mary the Virgin, it was not called Oriel until a little later, a building called La Oriole having previously stood on the site. The older build-



Oriel College arms called La Oriole having previously stood on the site. The older build-



Oriel College, Oxford. Front quadrangle of the old buildings, showing hall (left) and chapel (right)

ings, including the beautiful front quadrangle, face Oriel Street, while newer ones face High Street. The head of the college is the provost. S. Mary Hall has since 1902 been incorporated with Oriel. This college was specially associated with the Oxford Movement. Of later members the most distinguished is Cecil Rhodes, who left a large sum of money to the college and provided funds for the new buildings. See Oxford Movement; consult also Oriel College, D. W. Rannie, 1900.



Oriel window, dating from 1361, in the parsonage of S. Sebaldus, Nuremberg

Orient (Lat. *oriens*, rising). Region where the sun rises, *i.e.* the east. It is used, more or less poetically, as a synonym for the eastern parts of the world, *e.g.* China, Japan, etc., and their inhabitants are sometimes called Orientals. An Orientalist is one who is acquainted with the learning of the East. In the same way the western parts of the world are sometimes called the Occident.

Oriental Studies, SCHOOL OF. London educational institution. Founded in 1916, it is a department of the London Institution,

Finsbury, an educational centre established in 1806. Teaching is provided in seven groups of languages, comprising 20 different tongues, and in the history, religion, and customs of Oriental and African countries. The senate of the university of London transferred to the new school the

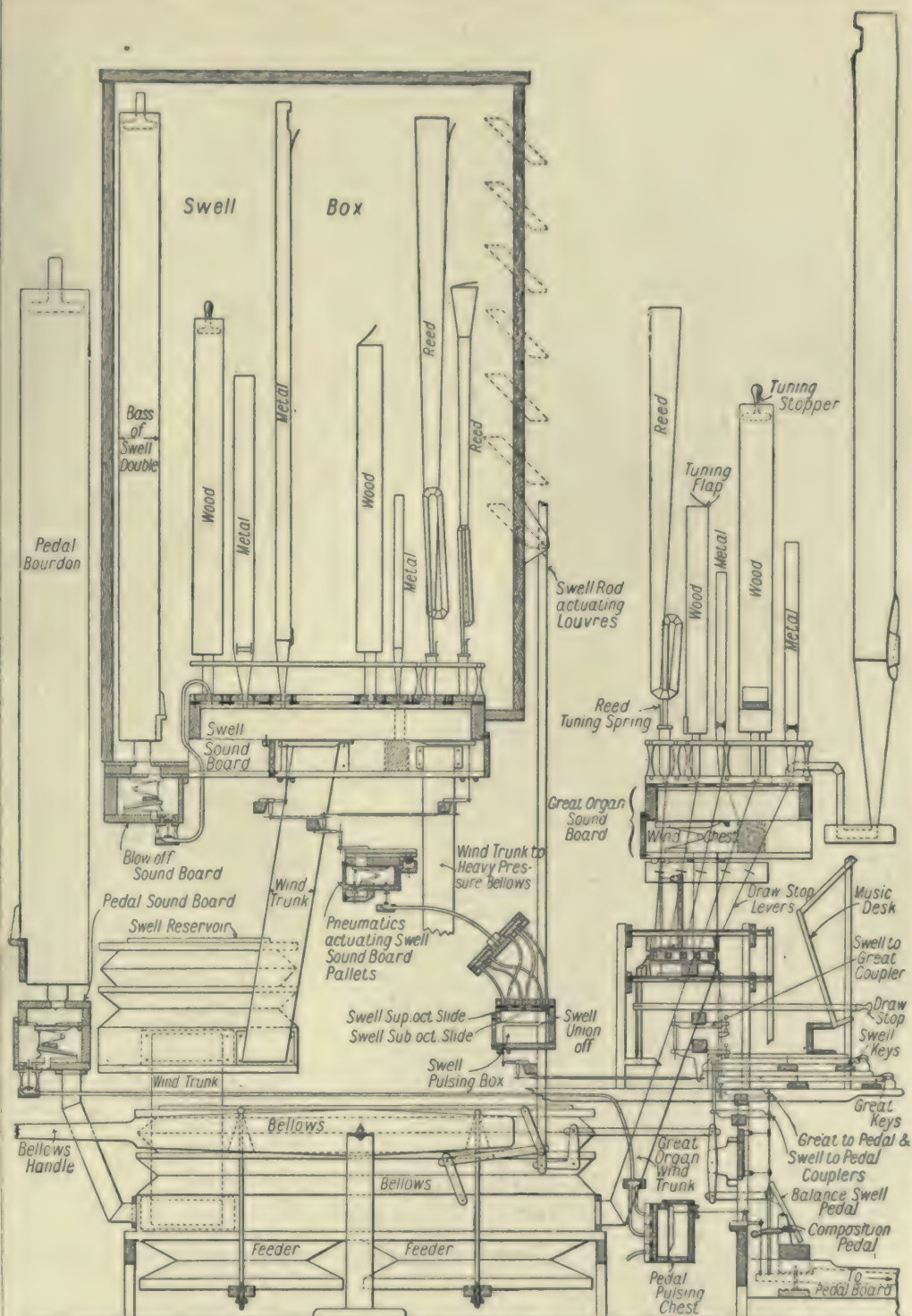
teachers in the Oriental departments at University and King's Colleges, excluding Egyptology, Assyriology, and Hebrew.

Orientation. Primarily, the turning towards the East, or Orient. In architecture, the term is applied to the setting of a building with reference to the compass points. The main entrance to Greek temples faced E. so that the level rays of the early sun lit up the image of the divinity. Early Christian basilicas were similarly orientated, but when a change of ritual involved the turning of priest and congregation to the E. the orientation was reversed, and from the 6th century most churches were built with the altar at the E. end and the main doors at the W.

The setting of a map so that it corresponds with the country, *i.e.* so that the true N. on the map points to the N. Pole, is also called orientation. It is the determination of one's position with regard to the compass points.

In biology, orientation is the change of position exhibited by various protoplasmic bodies within a cell due to external influences, *e.g.* light and heat. In physiology, it is a normal adjustment of any organism to its environment.

Oriente. Prov. of Ecuador. Occupying an E. triangle of the country wedged between Peru and Columbia, it comprises almost half the state. The land slopes E. from



Section of two-manual organ blown by hand. The part known as the great organ, seen to the right, is actuated by trackers or wires connecting direct with the pipes; in the swell organ, seen on the left, the keys communicate pneumatically with the pipes

ORGAN: SECTIONAL DIAGRAM ILLUSTRATING THE MECHANISM OF A CHURCH ORGAN

the Andes and is included in the Valley of the Amazon, which is fed by the waters of the Napo, Curaray, Tigre, and Postaza. Although fertile and capable of producing cotton in large quantities, it is little known owing to its inaccessibility. Archidona, on an affluent of the Napo, is the provincial capital. Est. pop. 80,000.

Orient Line. British steamship company. Founded in 1877 to provide a service between London



Orient Line flag,
blue cross on
white

and the Australian ports of Melbourne, Sydney, and Adelaide, it became the Orient Steam Navigation Co. in 1878, and has now services from London, Tilbury Dock, to Gibraltar, Naples, Suez, and Colombo, as well as the Australian ports. Its head offices are in Fenchurch Avenue, London, E.C. In 1917 it had a fleet of eight steamships, all names beginning with O.

Oriflamme (Fr., golden-flame). Sacred standard of the French kings. It was kept by ecclesiastics, and was supposed to have been the cloak of a saint, some say the blue mantle of S. Martin; according to others, it was red. It was destroyed in battle. The second oriflamme, kept at the abbey of S. Denis, was red with yellow flames, and had streamers. It was raised by the French at Agincourt, after which no more was heard of it. See Flag.



Oriflamme. 5-pointed French royal standard

Origen OR ORIGENES (c. 185-254). Greek father of the Church. Born at Alexandria, son of Leonidas, a Christian martyr, he was educated by Clement and Pantanus. He taught in the catechetical school at Alexandria, where he founded a theological school, was imprisoned during the Decian persecution, 250, and died at Caesarea or Tyre. A voluminous and learned writer, whose orthodoxy was questioned, he wrote, in Hexapla, a polyglot of the O.T., the first textual criticism of the Bible. Origen also wrote commentaries and other exegetical works, a defence of Christianity, Against Celsus, and aimed at adapting Greek philosophy to the needs of Christian theology. See

Lives of the Fathers, F. W. Farrar, 1889; Origen and Greek Patristic Theology, W. Fairweather, 1901.

Original Seceders. Body of Scottish Presbyterians formed in 1842 from the remnants, or Auld Lights, of both burgher and anti-burgher parties of the Secession Synod unabsorbed into the Church of Scotland or United Presbyterians. The Original Seceders opposed the use of instrumental music in public worship, and favoured national establishments of religion based on the Solemn League and Covenant. See Auld Lights; Scotland, Church of.

Original Sin. Term for the mystical Christian doctrine that man inherits sin by descent from Adam. It was defined by the Council of Trent, and is regarded as being implied in Ps. li, 7; Rom. v, 1-2; and, combined with the equally mystical doctrine of divine grace, in 1 Cor. xv, 21-22. See Atonement; Fall, The; Free-will; Grace.

Originating Summons. In English legal procedure, a summons returnable before a master or a judge, when no writ has been issued. An inexpensive proceeding, it is used in many cases relating to trusts and other matters where a legal decision is necessary, though the facts are not in dispute. Thus, if executors or trustees are in doubt about the construction of a claim in a will or settlement, they ask the court to interpret it by originating summons.

Origin of Species. Book by Charles Darwin published Nov. 24, 1859, with the full title On the Origin of Species by the Means of Natural Selection. The theory was first clearly conceived by him in 1839. He was engaged on an extensive presentation of the subject, when Alfred Russel Wallace (q.v.) sent him an essay showing that he also had independently reached much the same conclusions. This led Darwin to publish an abstract of the larger work originally planned by him. See Darwin; Darwinism.

Orihuela. Town of Spain, in Alicante. Situated on a plain called the Garden of Spain, the town is on the Segura river and is backed by a rocky ridge, the Cerro de Oro, 15 m. by rly. from Murcia. The bishopric dates from 1265, and there are tanneries, corn and oil mills, and textile factories. Known to the Moors as Auriwelah, it was the Orclis of the Goths, who here made a last stand under Theodoric. Pop. 30,000.

Orillia. Town and watering-place of Ontario, Canada. It stands on Lake Couchiching, 86 m. N. of

Toronto, and is served by the G.T. Rly. and C.P. Rly. Steamers go from here to places on Lake Simcoe. Industries include the making of automobiles and agricultural implements. Pop. 7,000.

Orinoco. River of S. America. It rises in the Sierra Parima in the S. of Venezuela, near the Brazilian frontier, flows round these mts. in a great curve, thence E. to the Atlantic Ocean. S. of Mt. Duida the river gives off a strong flowing stream, the Casiquiare, which joins the Rio Negro and thus connects the Orinoco with the Amazon. The right-bank tributaries, all from the Sierra Parima, are the Ventuari, Caura, and Caroni; those of the left bank, Guaviare, Meta, and Apure, flow across the llanos from the Colombian Andes.

Between the mouths of the Guaviare and the Meta the main stream makes the falls of Maipures and Atures 36 m. apart, which prevent the passage of boats between the navigable stretches above and below them. About 160 m. from the sea the Orinoco delta begins, upwards of 50 channels distributing its waters into the Gulf of Paria or direct to the Atlantic Ocean. Ocean steamers reach Ciudad Bolivar 200 m. from the ocean, where the river is tidal. Its length is 1,600 m.

Oriole (*Oriolidae*). Family of passerine birds, natives of the Old World. About the size of a thrush,



Oriole. Specimen of the green oriole

they are richly coloured with yellow, olive green, and black; have strong bills, short legs, and long wings, and construct hammock-like nests, which are suspended between two forking branches. The Golden Oriole (*Oriolus galbula*) of Asia, S. Europe, and N. Africa is a regular visitor to Britain on migration, and would probably nest here but for the fact that it is shot immediately it is seen. The cock is golden yellow with the exception of the wings and the middle of the tail, which are black. In the hen the upper parts are yellow-olive and the pale underparts are streaked with brown.

Mainly insectivorous, the birds consume berries in the autumn. The so-called Orioles of the U.S.A. are not related, but belong to the family Icteridae.

Orion. In Greek mythology, a famous giant and hunter. Falling in love with Merope, daughter of Oenopion, king of Chios, he obtained from her father the promise of her hand, provided he cleared the island of wild animals, supposed to be an impossible task. Orion, however, duly performed it; but Oenopion made him drunk and put out his eyes as he lay asleep. Having recovered his sight by following the advice of an oracle, Orion took vengeance upon Oenopion. He was slain by Artemis with her arrows for attempting to violate her; or was killed by the bite of a scorpion as a punishment for boasting about his prowess as a hunter. After his death Orion was placed among the stars.

Orion. In astronomy, one of the constellations. Lying on the celestial equator, S.E. of Taurus, it contains the three famous stars, Rigel, Betelgeux, and Bellatrix. The constellation as a whole is one of the brightest in the sky. It contains a large number of variable stars and the great Orion nebula.

Orion. Nameship of a class of British battleships completed in 1911-12. They are 545 ft. long, 88½ ft. in beam, displace 22,500 tons, and have engines of 27,000 h.p., giving a speed of 21 knots. They carry ten 13.5-in., sixteen 4-in., and four 3-pounder guns. In this class are the Monarch, Thunderer, and Conqueror. The Orion was broken up in 1923.

Orissa. S. portion of the prov. of Bihar and Orissa, India. It includes the area where the predominant language is Oriya, and is composed of the Orissa division, area 13,743 sq. m., and the Orissa Feudatory States, area 28,046 sq. m., with popa. of 5,132,000 and 3,797,000 respectively. It contains the S. part of the Chota Nagpur plateau, and includes the lower valley and the delta of the Mahanadi and the greater portion of the Brahmani tributary. It contains the whole of the coast of the prov. in the division of Cuttack between Madras on the S. and Bengal on the N.

Oristano. City of Italy, in Sardinia. Situated almost in the middle of the wide sweep of the Gulf of Oristano, on the W. coast, it has rly. and steamer connexion with the other chief towns of the island, has important potteries, and trades in wheat, wine, and fish. Parts of the medieval fortifications are still standing. Pop. 7,100.

Oristano, GULF OF. Arm of the Mediterranean Sea. It is almost in the middle of the W. coast of Sardinia, 10 m. long and 5 m. wide, and receives the Oristano river, which has a course of 80 m. It forms a safe harbour for Oristano City.

Orizaba. City of Mexico, in the state of Vera Cruz. It is 70 m. S.W. of Vera Cruz, on the rly. to Mexico. Situated in a fertile valley, more than 4,000 ft. alt., it is a centre of the sugar trade, and has manufactures of textiles and tobacco, breweries, and rly. workshops. Pop. 35,700.

Orizaba, PICO DE. Highest peak in Mexico. Known to the Aztecs as Citlaltepētl (star mountain), it is situated 25 m. N. of the city of Orizaba, and rises to a height of 18,200 ft. An extinct volcano, its last noteworthy eruption occurred in 1566. In 1848 it was ascended for the first time.

Orkhon Inscriptions. Ancient stone records S. of Lake Baikal in the Orkhon valley, N.W. Mongolia. Discovered in 1889, the principal monument is four-sided, and bears tribal records in Chinese and old Turkic, incised in A.D. 733 in an alphabet derived from an Aramaic source. A later inscription, dated 805, was made under Uigur direction. These and others prove that the Turkic and Uiguric peoples of that time were predatory mounted nomads, having no settled town life, but with some cultural elements absorbed from the adjacent populations. The inscriptions have an important bearing on Finno-Ugrian origins. Although presenting some resemblances to runes, they have no Scandinavian relationships. See Rune.

Orkney Islands. Group of islands off the N. coast of Scotland. Pentland Firth, 6 m. wide, divides them from the mainland. The total area is 375 sq. m., and they form a county of Scotland. Islands and islets number altogether about 90, but only 30 are inhabited.

Pomona, or Mainland, is the largest. Others are North and South Ronaldsay, Stronsay, Hoy, Flotta, Rousay, Westray, Sanday, Shapinsay, Burray, and Eday.

Kirkwall on Pomona is the capital and largest place. Stromness is the only other town. With the Shetland Islands they send one member to Parliament.

The surface is mainly flat, except on the west coast of the larger islands and in Hoy, although there are hills in Pomona. Lochs Harray and Stenness, both



Orizaba, Mexico. Main street with the cathedral, looking toward the mountain

in Pomona, are the largest of a number of lakes. The chief industries are agriculture and fishing. The former includes the raising of oats and barley, and the rearing of cattle, sheep, and pigs. The cultivators of the land are mainly crofters. Scapa Flow (q.v.) is between Pomona and Hoy.

The Orkneys were known in early times as the Orcaades. In the 9th century they were conquered by the Norsemen, and made dependencies of Norway and Denmark. In 1468, when Christian



Orkney Islands. Map of the island group off the north coast of Scotland

I of Denmark married his daughter to James III of Scotland, he handed over the islands to Scotland as security for a dowry, but this was not paid, and the islands became definitely Scottish. On several are remains left by the Picts and earlier inhabitants. Pop. 26,000.



Orkney arms

Orland. Inland fylke or co. of Norway. In the N. the Dovrefjeld and the Jotunfjeld rise in Snehaetta and Goldhoppigen to 7,546 and 6,400 ft. respectively; in the S. the land is low near Lake Mjosen and Randsfjord. Between the heights a depression connects the Romsdal to the N.W. with the long valley of Gudbrandsdal, which leads to Lake Mjosen in the S.E. Here is the main road to the Atlantic coast, with a rly. for two-thirds of the way from Lillehammer at the head of Lake Mjosen, the chief town. Area, 9,756 sq. m. Pop. 130,000.

Orlando. Italian form of the name Roland (*q.v.*). It is that of a character in As You Like It. Orlando, one of the sons of Sir Rowland de Boys, driven from home by his elder brother, meets Rosalind and falls in love with her.

Orlando. VITTORIO EMMANUELE (b. 1860). Italian statesman. Born at Palermo, he became profes-



V. E. Orlando,
Italian statesman

sor of constitutional law there in 1883, entered the Italian parliament in 1898, and in 1908 was minister of public instruction, and later minister of justice. In 1916 he was minister of the interior, becoming prime minister in 1917. For the next two years Orlando was virtually dictator in Italy. He was a

dominant force at the Paris peace conference, constituting, with Lloyd George, Wilson, and Clemenceau, the "Big Four." His ministry fell in June, 1919, owing to his advocacy of a policy of compromise in regard to Fiume and other Italian demands. He later became president of the chamber, and in Oct., 1920, was appointed ambassador to Brazil. See Italy; consult also L'Italie sous le ministère Orlando, L. Hautecoeur, 1919.

Orle (late Lat. *orlum*, small border). In heraldry, a border round a shield, but not touching the edges. It is one of the sub-ordinaries. Small charges may be borne in orle, i.e. as a border.

Orléanais. One of the provs. into which France was divided before the Revolution. It lay around the city of Orléans, on both banks of the Loire. The Pagus Aurelianensis of the Romans, it was from the earliest times part of the domain of the kings of France.

Orléanists. Name of the political party which supports the claim of the family of Orléans (*q.v.*) to the throne of France. The supporters of Philippe d'Orléans (1674-1723), of Philippe Égalité, and of Louis Philippe represent its earlier phases. Under the Third Republic it fused with the Legitimist party in 1873, the comte de Chambord being

recognized as Henri V. But they suffered a setback in popular support by the papal encyclical of 1892, which urged the French Catholics to rally to their existing political constitution. Their present head is Louis Philippe Robert, duke of Orléans (*q.v.*), but they have little political influence.

Orléans. Island of Quebec, Canada. It is in the St. Lawrence river, 30 m. from the city of Quebec. It covers 69 sq. m., and is visited by pleasure seekers. Pop. 5,000.

Orléans. City of France. The capital of the dept. of Loiret, on the right bank of the Loire, 75 m. S.S.W. of Paris, it is a very ancient city. In early Roman days it was called Genabum,



Orléans arms



Orléans, France. 1. Hôtel de Ville, built in 1442. 2. West front of the 17th century Gothic cathedral of Ste. Croix. 3. House of Agnes Sorel, a favourite of Charles VII. 4. General view from the left bank of the Loire

and was rebuilt by Marcus Aurelius or Aurelian, after whom it was called Aurelianum. The old part of the city is still quaint and beautiful, and the modern city has broad streets and spacious boulevards. The principal of these is the Rue Jeanne d'Arc.

The cathedral of Ste. Croix, built at the expense of Henri IV in the 17th century, is the only Gothic cathedral built in Europe since the Middle Ages. The 14th century chapels of the choir are part of the older cathedral, burnt by the Huguenots in 1567. Of the other churches the finest is S. Aignan, which has beneath it a Romanesque crypt of the 9th century. The hôtel de ville dates from 1442, but fell into decay until purchased by the city in 1853, and restored.

The city is famous for its association with the name of Joan of Arc and the siege of Orléans, of which the city has many visible memories. These include the house in the Rue du Tabour in which the Maid was supposed to have lived, and which is now a museum of her relics. The equestrian statue of the heroine was built in the Place du Martroi in 1855. It is surrounded by designs in bronze representing scenes in her life. A cross called la Croix de la Pucelle, opposite the bridge on the left bank of the Loire, also perpetuates her memory. From the cellars of the ruined fort of les Tourelles were fired the cannon with which the English defended the city against the advance of Joan's army. The chief manufactures are vinegar and agricultural machinery. Pop. 72,000.

Orléans, SIEGE OF. English failure during the Hundred Years' War. The English were rapidly conquering France, and on Oct. 12, 1428, an English force, about 5,000 strong, under the earl of Salisbury, appeared before Orléans. An assault was attempted, but it was a failure, and Salisbury having been killed, a blockade was decided upon. The besiegers, however, were not numerous enough to encircle the city completely, and the siege dragged on until April. By then Joan of Arc appeared, and having entered Orléans, she led the garrison in a series of attacks on the English positions. One after another were taken, until on May 4, 1429, the besiegers, under Suffolk, abandoned the enterprise.

In 1563 Orléans, being a Protestant stronghold, was besieged by an army under Francis, duke of Guise, who was assassinated beneath the walls in Feb., 1563. On Oct. 11, 1870, the city was occupied by the Germans. They were driven out in Nov., but in

Dec. they recovered it, and held it until peace was made. See Franco-Prussian War.

Orléans, HOUSE OF. Branch of the house of Bourbon (q.v.). The first duke of Orléans was a younger son of Philip VI, and the second was Louis, a son of Charles V. The poet, Charles of Orléans, succeeded the latter, and his son became king as Louis XII in 1498. The title then lapsed, to be revived in 1626, when Gaston, a son of Henry IV, was made duke. He died without sons, and the next duke was Philip, a son of Louis XIII, whose descendants still hold the title, although it is not officially recognized in France. Philip's son was the regent Orléans, and from him it passed to Louis Philippe, who became king of the French in 1830. The king's son was Ferdinand, duke of Orléans, and the latter's grandson was Louis Philippe, duke of Orléans. Louis' father had claimed, on the death of the comte de Chambord in 1883, the headship of the Bourbons, and to this claim the son succeeded in 1894. See Legitimists; consult *Memoirs of the House of Orléans*, W. C. Taylor, 1849.

Orléans, CHARLES, DUKE OF (1391-1465). French poet. Son of that duke of Orléans who was murdered by the Burgundians in 1407, he married his cousin Isabella, widow of Richard II of England, in 1406. In 1415 he was taken prisoner, and ransomed in 1440, when he returned to France. He ranks as the greatest of the late French medieval poets. His works comprise about 100 ballads and songs, and about 400 rondeaux, marked by delicacy and charm. Charles died at Amboise, Jan. 4, 1465. See *Familiar Studies of Men and Books*, R. L. Stevenson, 1882.

Orléans, GASTON, DUKE OF (1608-60). French prince. Son of Henry IV, Jean Baptiste Gaston was born April 25, 1608. He was made duke of Anjou and then duke of Orléans, and was no sooner of age than he began his career as a rebel against the existing political order; until 1638, when Louis XIII had a son, he was heir to the throne. Richelieu was his special antipathy, but plot after plot only resulted in the discomfiture and exile of the prince. Several times he succeeded in returning, and in 1643, when Louis died, had a position of responsibility, but the out-

break of the Fronde recalled him to more congenial occupation. After changing from side to side, he was exiled from Paris, and died at Blois, Feb. 2, 1660.

Orléans, HENRI PHILIPPE MARIE, PRINCE OF (1867-1901). French prince. The eldest son of Robert, duke of Chartres, and thus a member of the royal family of France, he was born in England, Oct. 16, 1867. He made his mark as a traveller and did much exploring in Asia and Africa. He found the sources of the Irawadi, and his discoveries in Tibet gained him the medal of the Paris Geographical Society. Some public remarks about the conduct of the Italian soldiers in Abyssinia led to a duel between him and the count of Turin, a member of the Italian royal family. The prince died in Assam, Aug. 9, 1901. He wrote several books of travel.

Orléans, HENRIETTA ANNE, DUCHESS OF (1644-70). English princess. Third daughter of Charles I and Henrietta Maria, she was born at Exeter, June 16, 1644, secretly conveyed to France in 1646, and educated as a Catholic in Paris. After a visit to England, 1660, she married Philippe, duke of Orléans (1640-1701), in Paris in March, 1661. She attracted the favour of Louis XIV, who sent her to England, 1670, to induce Charles II to conclude the treaty of Dover. On June 30, 1670, twelve days after her return, she died suddenly at St. Cloud, poisoned, it was suspected, by her jealous husband. See *Madame: A Life of Henrietta, Duchess of Orléans*, J. Cartwright, 1894.

Orléans, LOUIS PHILIPPE JOSEPH, DUKE OF (1747-93). French nobleman, better known as



Philippe Egalité,
Duke of Orléans
After Reynolds

Philippe Egalité. Born at St. Cloud, April 13, 1747, he was son of Louis Philippe d'Orléans, and cousin of Louis XVI. He served in the navy, succeeded to the title in 1785, and became known for his dissipated life and democratic ideas. Bitterly disliked by Louis and Marie Antoinette, he supported the



Duchess of Orléans,
English princess
After Mignard



Charles,
Duke of Orléans

claims of the Tiers État (third estate), 1789, entered the National Convention, 1792, and voted for the execution of Louis. Arrested in April, 1793, he was acquitted of conspiracy at Marseilles, but was retried at Paris, and guillotined Nov. 6, 1793. See *Histoire de Louis Philippe Joseph, duc d'Orléans*, Tournois, 1842.

Orléans, LOUIS PHILIPPE ROBERT, DUKE OF (b. 1869). French nobleman, claimant to the crown of the Bourbons. Born at Twickenham, Middlesex, Feb. 6, 1869, son of the comte de Paris (1838-94), he was educated at the Collège Stanislas, Paris. Exiled by the law of 1886, he entered Sandhurst, 1887, and served with the 60th Rifles in India, 1888-89. In Feb., 1890, having gone to Paris to claim the right of performing a Frenchman's military duties, he was sentenced to two years' imprisonment, but was released in June. In 1896 he married the archduchess Maria Dorothea of Austria. An experienced traveller, he published *Une Croisière au Spitzberg*, 1905, and *Chasses et Chasseurs Arctiques*, 1911 (Eng. trans. 1911).

Orléans, PHILIP I, DUKE OF (1640-1701). French soldier. Son of Louis XIII and Anne of Austria, he was born at St. Germain, Sept. 21, 1640, and bore the title of duke of Anjou until 1661. He married in 1661 Henrietta, daughter of Charles I of England, and in 1671 Charlotte Elizabeth of Bavaria. He fought in Flanders, 1667, in Holland, 1672, and was in command at the victory over the prince of Orange near Cassel, 1677. He incurred the jealousy of Louis XIV by his military successes, but was present later at the sieges of Mons, 1691, and Namur, 1692. He died at St. Cloud, June 9, 1701. See *Orléans, Henrietta*; consult also *A Prince of Pleasure: Philip of France and his Court*, H. Stokes, 1913.

Orléans, PHILIP II, DUKE OF (1674-1723). Regent of France. Son of Philip, duke of Orléans,

and so a near kinsman of Louis XIV, he was born Aug. 4, 1674. He became a soldier, and served in Flanders, and afterwards in Italy and Spain. He was a prominent figure among those



Philip II,
Duke of Orléans
After J. B. Santerre

who, after a succession of deaths in the royal family, tried to seize the reins of government in view of the king's approaching end. Louis XIV

named him in his will as president of the council of regency, but he wanted more than this titular office, and, assured of popular support, boldly seized the supreme power and ruled France until his death, Dec. 23, 1723.

Orléans introduced a number of desirable domestic reforms, struck hard at the influence of the Jesuits, and in other ways showed a desire to do well for France. But he was not the man to cope with the state of affairs; the finances were in chaos, and the schemes of John Law (*q.v.*) made matters worse. In foreign affairs the regent was hostile to Spain. Orléans was a dissolute man in a dissolute age, and his name is almost a byword for excesses of every kind. Yet he had marked abilities, loved music, studied chemistry and philosophy, and both as an orator and a soldier was more than mediocre. See *France under the Regency*, J. B. Perkins, 1892.

Orloff. Name of a Russian family. Its first prominent member was Grigorei Ivanovitch (1734-83). Having distinguished himself in the Seven Years' War, he attracted the favourable notice of the grand duchess Catherine, and was the leading spirit in the conspiracy to place this princess on the throne in 1762. He afterwards lost favour at the court, chiefly owing to the rise of Potemkin, and died mad.

His brother, Alexis (1737-1809), began life as a simple soldier. He was a man of great courage and audacity, and was one of the assassins of Peter III in 1762. He was created an admiral in 1768 and defeated the Turks at Chesme. In 1796 he was exiled by Paul I. His nephew, Grigorei Vladimirovitch (1777-1826), was a scholar, who chiefly devoted himself to history, politics, and literature. With him died the legitimate male branch of the family. Alexis Fedorovitch (1787-1861) distinguished himself in the Napoleonic wars. After concluding the treaty of Adrianople, Sept. 14, 1829, he went as a plenipotentiary to Constantinople, and

in 1833 he persuaded the Sultan to sign the peace of Unkiar-Skelessi. His son, Nikolai Alexievitch (1827-85), after distinguishing himself at the siege of Silistria in 1854, in 1860 became ambassador at Brussels, and from 1872-80 was ambassador in Paris and Vienna. See *Gatchina*.

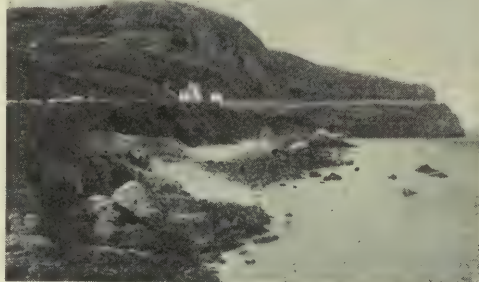
Ormerod, ELEANOR ANNE (1828-1901). British entomologist. Born at Sedbury, Gloucestershire, she



early took up the study of insect life. From 1882-92 she was consultant to the Royal Agricultural Society, and was the first woman to receive the degree of LL.D. at Edinburgh University. She published *A Manual of Injurious Insects*, 1881; *Guide to Methods of Insect Life*, 1884. She died July 19, 1901. Her autobiography was published in 1904.

Ormesby. Suburb of Middlesbrough, Yorkshire, England. It has a station on the N.E. Rly. The chief building is the Norman church of S. Cuthbert, and the main industries are the coal mines and iron and steel works of this region. Formerly a separate village, it was made part of Middlesbrough in 1913. Ormesby is also the name of one of the Norfolk Broads. See *Broads*.

Orme's Head, GREAT AND LITTLE. Promontories, 4 m. apart, on the coast of N. Wales, in the N.E. of Carnarvonshire. Llandudno is on the bay between them.



Orme's Head, North Wales. View of the Great Orme, from the pier at Llandudno

The Little Orme is a limestone height rising sheer from the sea, and its caves can only be reached by boat. The Great Orme is flat topped, a road specially constructed in 1879 encircles it, and a funicular rly. gives access to the summit. A lighthouse with group occulting light is 325 ft. above high water.

Ormiston. Village and parish of Haddingtonshire, Scotland. It is on the Tyne, 12 m. from Edinburgh. The chief occupation is in the surrounding coal mines. Pop. 1,600.

Ormolu (Fr. *or*, gold; *moulu*, ground). One of the brass alloys. It generally consists of copper 58 parts, zinc 26, and tin 16, and is employed in the preparation of small statues, candlesticks, and other articles, and as the basis of a form of enamel work. In the latter, a design is chiselled in the metal and the cavities are filled with enamel material, which is fused into a solid mass with the metal by heating. Such enamel is styled *émail cloisonné*. The art has long been practised by the Chinese. See Louis Style.

Ormonde, EARL AND MARQUESS OF. Irish titles, held by the family of Butler. The 1st earl was James Butler (c. 1305-37), who married a granddaughter of Edward I. James, 2nd earl (1331-82), and James, 4th earl (d. 1452), each held the post of governor of Ireland. The 5th earl, James (1420-61), came to England, was created earl of Wiltshire in 1449, was high treasurer in 1455 and 1459, but fell with the Lancastrian party. His two brothers, the 6th and 7th earls, were ambassadors in the service of the English crown. On the death of the latter, in 1515, the title fell into abeyance. In 1538 the title was resumed by Piers Butler, cousin of the last earl. Thomas (1532-1614), grandson of Piers, was the 10th earl, and a Protestant, aiding Elizabeth in repressing the rebellion in Munster. His kinsman, James (q.v.), the 12th earl, was made marquess in 1642, and duke in 1661. (See Kilkenny).

The dukedom was lost when the 2nd duke was attainted in 1715, but on his death in 1745 his brother called himself earl of Ormonde. In 1791, after a period during which there was no earl, a relative, John Butler, was declared earl. For his son the marquessate was revived in 1816. It became extinct in 1820, but was revived in 1825.

Ormonde, JAMES BUTLER, 1ST DUKE OF (1610-88). Irish royalist. Born Oct. 19, 1610, he was brought up under James I's wardship, succeeded to the earldom, 1632, and was a valuable supporter of Wentworth in Ireland, 1634-40. From 1641-43 he kept the disaffected

Irish in check by his able generalship, and was made lord lieutenant, 1644. During 1644-46 Ormonde had to face the double opposition of the Catholic rebels and of the parliamentarians; the terms of a peace with the latter forced his withdrawal from Ireland, 1647. He returned, 1648, but after defeat retired to France, 1650. Faithful to Charles II in exile, he became duke of Ormonde, 1661, and was lord-lieutenant 1662-69, and again 1677-84. He died July 21, 1688. See Life, W. A. H. C. Gardner, 1912.

Ormonde, JAMES BUTLER, 2ND DUKE OF (1665-1745). Irish soldier. Grandson of the 1st duke, he was



2nd Duke of Ormonde
After Kneller

born at Dublin, April 29, 1665, and succeeded to the dukedom, 1688. He supported the accession of William of Orange, under whom he fought at the Boyne, 1690, Steenkerk, 1692, and Landen, 1693. Lord-lieutenant of Ireland, 1703-7 and 1710-13, he also commanded the English armies in Flanders, 1712. There he obeyed secret orders to remain inactive, was relieved of his generalship, 1714, and impeached as a supporter of James Stuart, 1715, his estates being confiscated by the crown. Thereafter he lived abroad, commanded the Spanish fleet organized against England, 1719, and died Nov. 16, 1745.

Ormskirk. Urban dist. and market town of Lancashire, England. It is 12 m. from Liverpool, being served by the L. & Y. Rly. The church of SS. Peter and Paul, mainly Perpendicular, has a tower and spire side by side; it contains the burial vault of the Stanley family, whose former seat, Lathom House, is near. The town has a 17th century grammar school. The chief industries are the making of rope, brewing, and ironfounding. The town is noted for its ginger-bread. Market day, Thurs. Pop. 7,400.

Ormulum. Book of metrical paraphrases of the Gospels, with commentary. It was written by Orm or Ormin, an Augustinian

monk of N.E. Mercia, late in the 12th or early in the 13th century, and was first printed by R. M. White in 1852; new ed. R. Holt, 1878. A copy in MS. is in the Bodleian at Oxford.

Ormuz, STRAIT OF. Winding passage between the Gulf of Oman and the Persian Gulf. See Hormuz.

Ormuzd, ORMAZD, OR AHURA MAZDA. In Zoroastrian mythology, a being, or principle, representing



Ormuzd fighting the spirit of darkness in the form of a winged lion. From a relief found at Persepolis

light and goodness. He was the elder of the two emanations from the Eternal One; the second being Ahriman, the spirit of Evil. They are regarded as ever working against each other, every good thing created by Ormuzd at once receiving its equivalent ill from the other, but in the end the victory of Ormuzd is assured.

Ornain. River of France, a tributary of the Marne. It rises near Neuville, in the dept. of Haut Marne, and flows past Ligny and Bar-le-Duc. Its chief affluent is the Saulx, and its length is 75 m.

Ornament. Anything attached to or hung upon the human body for embellishment. Sometimes



Ormskirk, Lancashire. Market place and Cross Tower

serving useful purposes as well, and embracing all forms of dress other than protective clothing, it is distinguishable from decoration, which is personal enhancement effected without material adjuncts, such as hair-frizzing. Originating in a remote past, in some instances for amuletic protection, it is in universal use, especially for self-display, tribal discrimination, or ceremonial distinction.

Ornament is applied to the person by adhesion, entanglement, insertion, or encirclement. Adhesive ornament includes the application of paints and unguents to skin and hair, a practice traceable to palaeolithic Europe. Neolithic Crete used pottery stamps for printing coloured designs upon the skin. Body-painting, still widespread, is effected by mineral pigments and such vegetable extracts as the ancient British woad. Andamanese smear themselves with earth and lard, and draw lines therein with the fingers. Fijians bleach the hair with lime; Kavirondo negroes wear white clay stockings; Tibetan women form designs with seeds embedded in starch paste upon the cheeks.

Ornaments that encircle the body or its parts are of most importance, because they gave rise to clothing in all its forms. Headbands developed, not only into garlands and diadems, but also into protective headgear. Necklaces, originally thongs and grasses, sometimes plaited, bore perforated berries, shells, and teeth, at first often amuletic. This purpose was afterwards associated with pendants, such as the rats' ears enclosed in Etruscan gold lockets or the bright beetles reproduced as durable scarabs in ancient Egypt. Necklets of human teeth and bones occur in Melanesia. Girdles and belts, which preceded waist-cloths and skirts, acquire decorative forms in African cowry-strings and bead-strings, the tinkling attachments of bronze-age Europe and Patagonia, and the buckles of civilized dress.

In all ages ornaments have served as forms of portable wealth, including American Indian wampum and African cowries. In the early iron age of Hallstatt metal rings and armlets were made of fixed weights, exchangeable at will as ring-money. Personal ornaments worn by officials in virtue of their office, priestly, kingly, and the like, are classed as insignia. See Celt, colour plate; Dress; Earring; Jewelry; Lip-Ornament; Mutilation; Nose-Ornament; Ring.

Ornaments. In music, notes which could be dispensed with, without rendering the melody or

the harmony incomplete or unintelligible. This definition includes passing notes, appoggiaturas, acciaccaturas, mordents, syncopations, shakes, trills, and turns; also, in many cases, scales and arpeggios. See Musical Ornamentation, 2 vols., E. Dannreuther.

Ornaments.

Term for all articles used in, and subservient to, divine worship. Ornaments of the church include the altar or communion table, paten, chalice, vessels for wine and water, font, pulpit, Bible, Book of Common Prayer, etc.; of ministers, alb, chasuble, cope, surplice, rochet, pastoral staff, mitre, etc. In the Anglican Church, images, crosses, flowers, banners, etc., are allowable as decorations. The question as to what is permitted according to the Ornaments Rubric in the English Book of Common Prayer has involved much controversy and litigation, but generally most of the ornaments used in 1549 are regarded as legal. Much of the controversy centres in the distinction between decorative and symbolical use. See Ecclesiastical Law; Ritual; Ritualism; Vestments; consult also Principles of Religious Ceremonial, W. H. Frere, 1906; The Ornaments of the Church and its Ministers, Report of Convocation, 1908.

Orne. River of France. It rises near Sées and flows through Normandy into the English Channel. It is navigable for vessels of from 10 to 12 ft. at spring tides. Towns on its banks are Argentan, Écouché, and Caen. There is a canal from Caen to the sea. Its length is 94 m.

Orne. Dept. of France. In the N.W. of the country, it is an inland region, having an area of 2,372 sq. m. It has a number of hills, chiefly in the centre, but few in excess of 1,000 ft. high. The rivers include the Orne, which crosses the dept., Eure, Dives, Touques, Sarthe, and Mayenne. The dept. is noted for its horses. Dairy farming is carried on, cattle are reared, fruit is cultivated, and cereals, including wheat and barley, are grown. Some of the land is covered with forest. Alençon is the capital; other places are Argentan, Domfront, Montagne, Sées, and Flers. Before the Revolution, Orne was partly in Normandy and partly in Alençon and Perche. Pop. 315,000.

Ornitholestes (Gr. *ornis*, bird; *lestes*, robber). Extinct dinosaur. The animal was one of the smallest



Ornitholestes. Restoration of the bird-catching dinosaur common in the reptile age

By courtesy of the American Museum of Natural History

and most active of the dinosaurs, and lived principally upon birds. See Dinosaur.

Ornithology (Gr. *ornis*, bird; *logos*, word). Science and study of birds. See Bird; Migration; Parrot; Sparrow, etc.

Ornithopter (Gr. *ornithos*, of a bird; *pteron*, wing). Type of aircraft which is sustained and propelled by flapping movement of its wings. So far, certain small models are the only successful representatives of the type.

Ornithorhynchus (Gr. *ornithos*, of a bird; *rhynchos*, beak). Generic name for the platypus or duck-bill, one of the three animals forming the zoological order Monotremata or Prototheria. These animals stand at the foot of the mammalian ladder, with man at the top, and in several anatomical details show a marked resemblance to the reptiles. They are oviparous and have only one excretory aperture. There are no mammary teats in the female, but the milk exudes locally through pores in the skin of the abdomen.

Comparatively little is known of the habits of these animals, which are found in parts of Australia and Tasmania, but they live in pairs in burrows constructed in the banks of streams. Each burrow has two openings, one above and one below the surface of the water, and in the breeding season two eggs are laid in the nesting chamber. It is uncertain whether the mother hatches them. The animals are about at night, when they feed upon aquatic worms and insects. They swim and dive, but move awkwardly upon land. See Duckbill.

Orobanchaceae. Natural order of leafless herbs, root parasites. They are natives of temperate and tropical countries, particularly of Europe and Asia. The tuberous,

fleshy, or scaly rootstock is attached by rootlets to the rootlets of its host, and the stout, scaly stem ends in a spike or spray of flowers. There are four or five sepals and a gaping tubular corolla. There are about 12 genera and 150 species. See Broomrape; Toothwort.

Orontes, AXIOS OR NAHR EL ASI (the rebellious river). River of Syria. It rises near Baalbek and the source of the Leontes, and flows N. between the Lebanon and Anti-Lebanon ranges. Emerging to the plains, it expands into the small lake of Homs or Kades, and then continues N. between rocky walls until it turns abruptly W. and S.W. and flows across the plains of Antioch to the shore of the E. Mediterranean. S. of Hama the valley is followed by the rly. from Aleppo to Beirut and Damascus. Length, 240 m.

Oropus. In ancient Greece, a strong seaport on the Euripus, on the borders of Attica and Boeotia. After belonging alternately to Athens and the Boeotian league, with intervals of independence, after 146 B.C. it became a Roman provincial town, being again restored to the Athenians by Antony or Augustus. The town was celebrated for the sanctuary of Amphiarus (*q.v.*), a god of healing.

Oroshaza. Town of Hungary. It is situated on the Alföld, 33 m. N.E. of Szeged, in the co. of Bekes, and has trade in grain. Pop. 22,300.

Orotava. Town of Tenerife, Canary Islands. It is near the N. coast, in a beautiful valley, and is a health resort. Bananas, potatoes, wine, and cochineal are exported. Pop. 10,000.

Orpen, SIR WILLIAM (b. 1878). British painter. Born in Dublin, Nov. 27, 1878, he studied at the Dublin metropolitan school of art, and the Slade School, London, and began to exhibit at the New English Art Club in 1899. He became A.R.A. in 1916, and R.A. in 1919. At first a painter of subject pictures of



Sir William Orpen. *Le Chef de l'Hôtel Chatham*, the painting exhibited at the Royal Academy Exhibition of 1921 and later presented by the artist to the R.A. as his diploma picture

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chiefly interiors, he developed into one of the most brilliant portraitists of the day. During the Great War he was commissioned by the government to paint pictures of the battle scenes and personalities on the western front, and also painted scenes in connexion with the Paris Peace Conference, 1919. These experiences he recounted in *An Onlooker in France*, 1917-19, published in 1921. His painting, exhibited in the Royal Academy in that year, entitled *Le Chef de l'Hôtel Chatham*. Paris, aroused widespread interest, and was presented to the R.A. by the artist as his diploma work. He was knighted in 1918.

Orphan (Gr., destitute). Child or minor deprived by death of father, or father and mother. In the U.K. the lord chancellor is the general guardian of all orphans. See Children.

Orpheus. In Greek mythology, son of the muse Calliope. He was famed for his extraordinary skill with the lyre, bestowed upon him by Apollo. So compelling was his music that not only the beasts of the field, but even trees and rocks followed the sounds of his lyre. He accompanied the Argonauts in their expedition to the Black Sea, and lulled the dragon which guarded the Golden Fleece.



Sir William Orpen,
British painter
Elliott & Fry

On the return of the expedition, he settled in Thrace, and there his wife Eurydice (*q.v.*) died of a serpent bite. Her memory remained with him, and he consistently rejected the advances of the Thracian women, who, in revenge for his contemptuous treatment, tore him to pieces. The muses set his lyre among the stars. Tradition represents Orpheus as a poet as well as a musician. See Eurydice.



Orotava, Tenerife. The town and harbour looking northward from the slopes of the Peak

Orphism. Term for the mystical doctrines associated with the brotherhood reputed to have been founded by the Thracian Orpheus, and first mentioned by Ibycus, 530 B.C. The Orphic rites in which they engaged were closely connected with the worship of Dionysus. The sect, which continued into Roman times, believed in original sin and transmigration of souls, abstained from certain foods and bloody sacrifices, practised purification rites, and were later associated with the Pythagoreans. See *Aglaophamus* C. A. Lobeck, 1829.

Orphrey (O.Fr. *orfreis*; Low Lat. *aurifrigium*, Phrygian gold-work). Term applied to a band of gold embroidered on ecclesiastical vestments. Worked on copes and chasubles, orphreys were frequently exquisite specimens of needlecraft.

Orpiment (Lat. *auri pigmentum*, gold pigment). Native form of arsenic. Chemically it is arsenic trisulphide (As_2S_3), or yellow sulphide of arsenic. It is also formed by the action of sulphurated hydrogen on a solution of arsenious oxide. The pigment known as king's yellow is a mixture of yellow sulphide of arsenic and arsenic, but owing to its poisonous nature it has been superseded by less harmful compounds. Realgar, or arsenic disulphide, is sometimes called red orpiment.

Orpington. Parish and village of Kent, really a suburb of London. It is 14 m. from London and 9 m. from Sevenoaks, with a station on the S.E. & C. Rly. The river Cray rises here, and around are large areas under fruit. The church of All Saints is mainly Early English, with some old brasses. At Orpington, in 1873, Ruskin set up a printing establishment. Here, during the Great War, was a Canadian hospital. Pop. 5,000.

Orpington. Name given to certain domestic fowls. The claim made for them that they constitute a distinct breed is disputed. Their



Orpington. Male specimen of the white variety of the breed

name arose from the fact that the Black Orpington was raised by W. Cook of that place, who stated that he raised them from crossings of the black Plymouth Rock, the Langshan, and the Minorca. The Buff Orpingtons are said to have been bred from Cochins crossed with ordinary farmyard fowls, and selected until the type was fixed. Orpingtons are good layers and good table birds. There is also a white Orpington. See *Fowls*, colour plate.

Orrell. Urban dist. of Lancashire. It stands 3 m. from Wigan and near the Leeds and Liverpool canal. The chief industry is the manufacture of cotton. Pop. 6,000.

Orrery. In astronomy, a device or framework for exhibiting the motions of the planets about the



Orrery made by Benjamin Martin, c. 1770

Science and Art Museum, S. Kensington

sun. It is so called from the 4th earl of Orrery, for whose instruction one was first made in the 18th century. See *Planetarium*.

Orrery, EARL OF. Irish title borne by the family of Boyle since 1660. Roger Boyle, the 1st earl, was a younger son of the 1st earl of Cork. Born April 25, 1621, he was educated at Trinity College, Dublin. As Baron Broghill, he fought for Charles I in 1642, but for the parliamentarians in 1647, and as a general under Cromwell, in Ireland, in 1650. He was created earl of Orrery in 1660, and was lord president of Munster, 1660-68, and died Oct. 16, 1679. His romance, *Parthenissa*, first appeared in 1654, his *Treatise on the Art of War*, 1677; and he was the author of various poems and tragedies.

Roger was succeeded by his son Roger, and the latter by his elder son Lionel. When Lionel died in 1703, his brother Charles (1676-1731) became the 4th earl. His son John, the 5th earl, succeeded



1st Earl of Orrery, Irish peer

to the earldom of Cork in 1753, and since then the two titles have been united. See *Cork*, Earl of.

Orris Root. Dried rhizome of the Florentine iris (*I. florentina*), which gives off a strong violet-like odour causing it to be extensively employed by the perfumer. "Essence of violets" is prepared from it, and it forms the basis of "violet powder" and other toilet powders. It is chewed to disguise offensive breath, and it possesses emetic and cathartic properties. Some of the orris-root of commerce is obtained from *Iris pallida*. Both species are natives of the Mediterranean region. See *Iris*.

Orsay, ALFRED GUILLAUME GABRIEL, COUNT D' (1801-52). French dandy. Born in Paris,



Count d'Orsay French dandy

After R. J. Lane, R.A.

Sept. 4, 1801, he served as lieutenant of Louis XVIII's bodyguard, and in 1822 formed an intimate friendship with the 1st earl and countess of Blessington, with whom he travelled in Italy. In 1827 he married Lady Harriet Gardiner, daughter of the earl's first marriage. After the earl's death in 1829, d'Orsay lived with the countess at Kensington, and their house became famous as an intellectual and social centre. D'Orsay was of fine appearance, and a brilliant conversationalist. With Lady Blessington he left for Paris, bankrupt, in 1849, and was appointed director of fine arts shortly before he died on Aug. 4, 1852. See Beaconsfield, Earl of; Houghton, 1st Baron; consult also *Literary Life and Correspondence of the Countess of Blessington*, R. R. Madden, 1855.

Orsha. Town of W. Russia. It is in the govt., and 50 m. N., of Mohilev, and stands on the Dnieper, where it joins the Orshitsa. Pop. 21,000.

Orsini, FELICE, COUNT (1819-58). Italian revolutionist. A Romagnol by birth, he became an

advanced liberal, and in 1844 was sentenced to life imprisonment for his connexion with the revolutionary party. Liberated under the amnesty of Pius IX, 1846, he was a member of



Felice Orsini, Italian revolutionist After Vintner

the government of Rome during the republic of 1849, and on its fall became an indefatigable agitator. Regarding Napoleon III as the incarnation of the spirit of reaction, Orsini made his way to Paris, and on Jan. 14, 1858, threw a bomb at the emperor and empress as they drove to the Opéra. They escaped injury, but ten other people were killed and 150 wounded by the explosion, Orsini among them. He was arrested and executed March 13, 1858. See *Memoirs*, Eng. trans. 1857.

Orsk. Town of Russia. It is in the govt., and 155 m. S.E., of Orenburg, near the junction of the rivers Or and Ural. There are tallow, soap, and brick works, and in the dist. are copper mines and gold washings. Orsk was a fortress of the Orenburg line, erected against Kirghiz inroads. Pop. 22,000.

Orsova. Two towns of Rumania, known as Old and New, and formerly in the S.W. corner of Hungary. Here the Carpathians



Orsova, Rumania. The town of Old Orsova, from the right bank of the Danube

terminate against the Danube, and 5 m. downstream are the Iron Gates; parallel with them the Cserna flows S. to the Danube, and Orsova marks the confluence of the two streams. The rly. from Budapest follows the Cserna and Danube valleys past Orsova station 2½ m. from the town. Close to the station Kossuth buried the Hungarian crown in 1849. Old Orsova stands on the W. bank of the Cserna. Pop. 5,800. New Orsova, on the E. bank, was a Turkish fortress. Pop. 3,000. *Pron.* Orshōva. See Rumania, Conquest of.

Ortegal. Cape on the northwest coast of Spain, one of the most northerly points of the Spanish seaboard. It is known for the naval engagement, also called the battle of Cape Ferrol, that took place off here between the British and the French, Nov. 4, 1805. The action consisted of a successful attack by Sir Richard J. Strachan, in command of three

line-of-battle ships and four frigates, upon four French ships of the line. These vessels had escaped from Trafalgar, and with their capture the French fleet was destroyed. See Trafalgar.

Ortheris, PRIVATE STANLEY. Character in Rudyard Kipling's Indian army stories, and more particularly one of the principals in the stories of *Soldiers Three*. He is a keen-witted little Cockney whose ambition is to keep a taxidermist's shop.

Orthez. Town of France. It stands on the Gave de Pau in the dept. of Basses Pyrénées, 25 m. from Pau. There is a 13th century tower, part of the destroyed castle, an old church with a remarkable choir, and a modern town hall. The industries include the manufacture of cotton, paper, and leather, milling, and an agricultural trade. Orthez was, in the 13th century, the capital of the viscounts of Béarn. With Béarn it became part of the lands of the

counts of Foix, and here Gaston Phoebus held his splendid court, vividly described by Froissart. There was a university here in the 16th century; the building is now a factory. It was a centre of Calvinistic teaching and Protestants are still numerous in the town. The river is here crossed by two bridges. Pop.

6,000. *Pron.* Ortay.

Orthez, BATTLE OF. One of the concluding actions of the Peninsular War, Feb. 27, 1814. After manoeuvring for some days round Orthez, the British under Wellington had forced the Gave de Pau river, when Soult took up a position near the Dax-Pau main road. Wellington immediately made dispositions to cut off his retreat. An attack on the French right early in the morning of the 27th failed, but a boldly conceived and brilliantly executed assault on the left, only effected by wading through marshes reputed to be impenetrable, was completely successful, and the French were driven back in confusion. Hill had cut off their main retreat along the Pau road, but by skilful strategy Soult effected his escape.

Orthite (Gr. *orthos*, straight). In mineralogy, name given to a hydrated variety of allanite. The latter is a mixture of calcium, iron,

aluminium, and other metals of the cerium group. Crystals of orthite up to 12 ins. in length are found in Sweden.

Orthoceras (Gr. *orthos*, straight; *keras*, horn). Genus of fossil nautiloid cephalopods. They are distinguished by their straight



Orthoceras. Specimen of *O. undulatum*

horn- or cone-shaped shells, the exterior of which is smooth or striated, and the interior divided into chambers by partitions. The fossil is important, as it serves as one of the index fossils, and was very common in Palaeozoic limestones. It is found in deposits from Silurian to Triassic times. The surviving nautilus is descended from the fossil orthoceras.

Orthochromatic Photography. Process by which the relative values of coloured objects as seen by the eye are recorded in monochrome more correctly than by the use of ordinary plates. These last are chiefly sensitive to the blue rays of light, so that in the resulting negative reds, yellows, and greens are not adequately represented, while blue objects are over-emphasised. To correct this disproportion plates made sensitive to red, yellow, and green by the addition of certain dyes to the emulsion have been introduced. The use of a yellow screen by absorbing some blue rays gives additional correction to the colour values. In some cases, however, the orthochromatic emulsion and the filter screen are combined on the plate itself. Colour-sensitive dry plates were first prepared in 1882, and are now highly efficient. See Colour Printing.

Orthoclase (Gr. *orthos*, straight; *klasis*, fracture). In geology, a potassium aluminium silicate or potash feldspar. It is a constituent of many crystalline rocks, e.g. granite, porphyry, gneiss, etc., has a lustrous glassy white, light yellow, green, or red colour, and crystallises in the monoclinic system. It is found widely distributed, and many varieties are cut and polished for gem stones, e.g. moonstones and sunstones.

Orthodox Eastern Church. Alternative name for the Holy Orthodox Catholic Oriental Church, also known as the Greek Church (*q.v.*).

Orthodoxy (Gr. *orthos*, right; *doxa*, opinion). Term commonly used for soundness of religious belief, but applicable in other spheres of thought. Its use assumes the existence of some standard by which opinion can be tested; but this standard differs considerably in the various sections of the Christian community. The Christian Church as a whole is agreed upon the fundamental doctrines of the Gospel; and these form the only real test of orthodoxy.

Shades of belief or thought that are not four-square with orthodoxy are called heterodox; while any teaching which directly contradicts the orthodox faith, or is plainly inconsistent with it, is called heresy. The Greek Church, which claims to have been pre-eminent in conserving the primitive faith, styles itself the Holy Orthodox Church. See Christianity.

Orthography (Gr. *orthos*, correct; *graphein*, to write). Exact representation of the sounds of a language by written signs. The ideal of "Write as you speak" has never been realized, for various reasons. The numerous shades of sound would require too many corresponding signs; pronunciation constantly changes, whereas spelling is more conservative; certain words are wrongly spelt in accordance with a supposed derivation (thus, *island* (*q.v.*) has nothing to do with *isle*); imported foreign words are sometimes altered, sometimes not (compare *fancy* and *phantom*). Italian and Spanish come nearest the ideal; English and French are most remote from it. Attempts made in England to improve and simplify the orthography have not met with official recognition.

Orthopaedia (Gr. *orthos*, straight; *pais*, child). Strictly, the treatment and correction of deformities in children. Orthopaedic hospitals, however, undertake the treatment of deformities and injuries generally, especially of the feet and legs.

Orthoptera (Gr. *orthos*, straight; *pteron*, wing). In entomology, name given to an order of insects. As a rule, their fore wings are stiff, and when at rest they cover the large hind wings with which the insects fly. The mouth parts are adapted for biting. The metamorphosis is incomplete, the larvae resembling their parents but having no wings. There are more than 10,000 recognized species, which include the cockroaches, locusts, grasshoppers, earwigs, etc. Orthoptera are among the oldest of fossil insects. See Insects.

Ortigueira. Watering-place of N. W. Spain, in Corunna prov., 23 m. N.E. of Ferrol. It stands on the E.



Oruro, Bolivia. Government palace in the Plaza 10 de Febrero

shore of the Ria de Santa Marta, an almost landlocked inlet between capes Ortegal and de Vares. The harbour is shallow, and is used mostly for the fisheries and coasting trade. Pop. 20,000.

Ortler OR ORTLER SPITZE. Alpine peak in N. Italy, in the Trentino. The highest point in the E. Alps, 12,802 ft. alt., it rises S. of the valley of the upper Adige, S.E. of the Stelvio Pass, with Mte. Cevedale to the S.E. The ascent was first made in 1804, the route from Suldén being discovered in 1865.

Ortolan (*Emberiza hortulana*). Bird of the bunting family. A summer migrant to Europe, spending the winter in Africa, its plumage is reddish brown, streaked with black on the upper parts, with a yellow throat and greenish breast and head. It nests on the ground, and feeds on insects and various seeds. It occurs very occasionally in England during the summer months. The ortolan is greatly valued as a table delicacy, and large numbers are netted in S. Europe and fattened upon grain.

Ortona. Town of Italy, in Chieti prov. It is situated on the Adriatic Sea on a headland with a quay on the shore below, and is on the coast rly. 12 m. S.E. of Pescara. The cathedral and a ruined castle are noteworthy buildings. There is considerable trade in wine. Destroyed by the Turks in 1566, Ortona has suffered from earthquakes and has lost much of its earlier importance as a port. Pop. 9,000.

Oruro. Dept. and town of Bolivia. The dept. lies on the W. of the state between Chile and the main range of the Andes. It contains Lake Poopo and part of the Desaguadero which connects that lake with Lake Titicaca. The whole dept. is at an alt. exceeding 12,000

ft. and is arid and wind-swept. Tin is the chief mineral, the silver mines being nearly exhausted. Llamas and alpacas are kept, their wool being the chief product. The town is a mining centre with an important school of mines; it is the chiefly. centre in the country, being connected with La Paz, Antofagasta, and Cochabamba. Its local industries include the manufacture of boots and alcohol. Area, 27,600 sq. m. Pop., dept., 160,000; town, 25,000.

Orvieto. City of Italy, in Perugia. It is built on a perpendicular, isolated rock near the Tiber, 60 m. N.N.W. of Rome. It trades in locally-produced wine. The superb cathedral, an excellent example of Italian Gothic, was begun in 1295, and is rich in sculptures, pictures, and mosaics. The museum, founded 1296, houses medieval works of art, and Etruscan and prehistoric antiquities. The Well of S. Patrick, adjacent to the citadel, has two spiral planes round the shaft which the water-carrying asses ascend and descend. The tombs in the Etruscan Necropolis date from the 5th century B.C. The town occupies the site of Volsinii, one of the twelve capitals of the Etruscan League, and was destroyed by the Romans in 280 B.C. Pop. 8,000.

Orwell OR GIPPING. River of Suffolk, England. Rising to the W. of Stowmarket, it flows S.E. to the North Sea. From its source to Ipswich it is known as the Gipping. The Orwell proper is an estuary, and extends for 11 m. from Ipswich to Harwich, where it merges with the estuary of the Stour. See Ipswich.

Oryx (Gr., pickaxe). Genus of large antelopes. It includes about six species, which occur in Africa, Arabia, and Syria. They have long and bushy tails and are distinguished by their long, ringed horns, which are nearly straight. See Gemsbok.

O.S. Abbreviation for old style, i.e. of reckoning dates. It was discovered about 1500 that the date of the year did not actually correspond with the annual progress of the earth round the sun. In 1582, therefore, Pope Gregory



Ortolan. Specimen of bird of the bunting family

XIII introduced a new calendar, the main feature of which was the addition of ten days to the existing date, i.e. Oct. 5 became Oct. 15. This was called the new style, and was soon adopted by the Roman Catholic countries, but less promptly by the Protestant ones. Great Britain did not make the change until 1752, when the difference between the two styles amounted to eleven days. It was ordered that Sept. 3 of that year should be reckoned as Sept. 14. Discrepancies in dates of birth, deaths, etc., are sometimes due to a confusion between the two styles. See Calendar; New Year's Day.

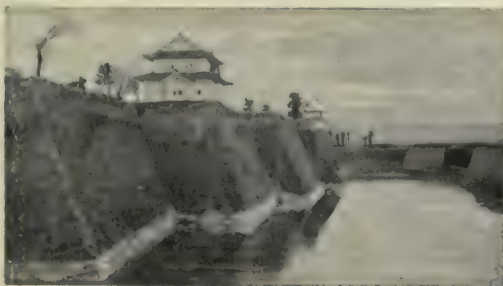
Osage Orange (*Maclura pomifera*) or Bow-wood. Small tree of the natural order Urticaceae, native of N. America. The stems are spiny, and the leaves oval to oblong-lance-shaped, and shiny. The flowers are inconspicuous and yellowish green. The individual fruits are small nutlets buried in



Osage Orange. Spray of foliage, with fruit, of the North American tree

the enlarged fleshy calyx; but a great number of them grow together, forming a multiple fruit, 3 ins. to 4 ins. in diameter, globular and yellowish green. The elastic bright orange wood was used by the Indians for making bows. It is much planted for hedges.

Osaka. City of Japan, in Honshu. It covers 8 sq. m. on the alluvial plain at the mouth of the Yodo and at the head of Osaka Bay. The temperature ranges from



Osaka, Japan. Ramparts of the castle built by Toyotomi Hideyoshi in 1584



Osaka. Plan showing the principal buildings and the harbour works of the Japanese seaport

27° F. to 100° F. A commercial and manufacturing city, its chief buildings of interest are the temples of Hokoku and Temma and the Japanese mint. Osaka Castle, 2½ m. distant, dates from 1584. The walls were built of granite stones, some 40 ft. long and 10 ft. high, but the superstructure was almost entirely destroyed by fire in 1868.

More than 7,000 factories produce 60 different classes of articles, of which the chief are cotton textiles, iron and metal goods, refined metals, leather goods, ships, glass-ware, confectionery, and patent medicines. Osaka is a great exporting centre for textiles, refined sugar, and straw goods, especially in the trade with China and Chosen (Korea). There are four exchanges for rice and cereals, stocks, cotton, cloth, and oils; the rice and cereal exchange regulates prices.

The city owes its prosperity to Toyotomi Hideyoshi, who built the castle and made his capital here. After the Toyotomi family lost its power, it retained its commercial importance, although Tokyo (Yedo) became the political capital. Kawamura Zuiken, in three years, 1684-87, constructed canals and embankments which secured the buildings against the floods of the Yodo. Pop. 1,250,000.

O.S.B. Abbrev. for Order of S. Benedict. See Benedictines.

Osborne, DOROTHY (1627-95).

English letter writer, daughter of Sir Peter Osborne, of Chicksands, a royalist who held Guernsey for the king. She met Sir William Temple (*q.v.*) in 1648, and became his wife in 1655. During their long courtship they maintained a correspondence, her share in which has been preserved and constitutes one of the outstanding contributions to English epistolary literature. She died at Moor Park in Surrey, and was buried in Westminster Abbey in 1695. See The Letters of Dorothy Osborne, ed. E. A. Parry, 1888; rev. ed. 1903.



Dorothy Osborne
After Sir Peter Lely

Osborne College. Former establishment for training cadets for the British navy. Opened Aug. 4, 1903, it was situated in the grounds of Osborne House, Isle of Wight. After passing the entrance examination, cadets, who were under 13½ years of age, were sent to Osborne for two years, passing thence to the Royal Naval College, Dartmouth. The college was under a captain, while for supervising the actual teaching there was a headmaster. At the outbreak of the Great War the average number of cadets was 468, and in 1920 it was 283. The college was closed in 1921, and the cadets and staff transferred to the Royal Naval College at Dartmouth. See Naval Cadet.

Osborne House. Mansion in the Isle of Wight built for Queen Victoria. It is 1½ m. from E. Cowes,

and, commanding a fine view of the Solent, is surrounded by an estate of about 3,000 acres. In 1845 the queen bought about 2,000 acres from Lady Isabella Blachford and the house, in the Palladian style, was built by Cubitt. It was a favourite residence of the queen, who died here in 1901. There are other residences, Barton Manor and Osborne Cottage, on the estate. In 1902 King Edward presented the house and estate to the nation. Part of it was devoted, at his wish, to a convalescent home for officers, but the royal apartments remained untouched, and are shown to visitors. In 1903 a royal naval college was founded here, new buildings being erected and some of the outbuildings adapted to accommodate about 400 cadets and the staff, but in 1921 this was closed. The Medina flows through the estate, for which there is a station at the neighbouring village of Whippingham.

Osborne Judgement. Legal decision which made it illegal for British trade unions to make compulsory levies upon their members for political objects. The House of Lords, on Dec. 21, 1909, gave judgement in the case of the Amalgamated Society of Railway Servants *v.* Osborne, in which they held that a rule which purports to confer on any trade union, registered under the Act of 1871, a power to levy contributions from members for the purpose of securing parliamentary representation is *ultra vires* and illegal.

Osborne objected to a compulsory levy by his union for the payment of a Labour M.P., and sued in the king's bench for a declaration that it was illegal. The decision went against him, but the court of appeal reversed this decision, and when the unions appealed to the highest legal tribunal the court of appeal's view was upheld. An indirect result of the judgement was the introduction of payment of M.P.'s, and in 1913 a Trade Union Act was passed validating a levy for political purposes if kept separate, but exempting any member who objected from obligation to contribute to the union's political fund. See Trade Unions: consult also The Osborne Judgement, F. Harrison, 1910; Trade Unions and the Law, W. V. Osborne and M. A. Judge, 1911; Sane Trade Unionism, W. V. Osborne, 1913.

Osbourne, Lloyd (b. 1868) American novelist. Born at San Francisco, April 7, 1868, he was the son of Samuel Osbourne and Fanny van der Grift. His mother afterwards married Robert Louis



Osborne House, Isle of Wight. Main front of the residence of Queen Victoria

Stevenson, and Osbourne, who lived with them in Samoa, where he was U.S. consul, made his reputation by his literary partnership with Stevenson. The two collaborated in *The Wrong Box*, 1889; *The Wrecker*, 1892; and *The Ebb Tide*, 1894. His own novels include *Love the Fiddler*, 1903; *Baby Ballet*, 1905; *Three Speeds Forward*, 1906; and *The Kingdoms of the World*, 1911. With Austin Strong Osbourne wrote *The Exile*, a play produced in London at The Royalty in May, 1903.

Oscans, OSCI, OR OPICI. Ancient Italian race, speaking a language akin to Latin, and inhabiting a considerable portion of central and S. Italy.

Oscar. Masculine Christian name. Of Teutonic origin, it means divine spear. The Germans spell it Oskar, and the Icelandic form is Askar. It is the name of the fifth son of the ex-kaiser, William II. Born at Potsdam, July 27, 1888, he entered the army. In 1914 he made amorganatic marriage with Ina, countess of Ruppini.

Oscar I (1799-1859). King of Norway and Sweden, 1844-59. He was born in Paris, July 4, 1799,



Oscar I, King of Norway and Sweden

the son of Marshal Bernadotte, and was created duke of Södermanland on his father's election as crown prince of Sweden. He was educated at Upsala, and

of Norway and Sweden. He was born in Stockholm, Jan. 21, 1829, the third son of Oscar I. He entered the Swedish navy as a boy, completed his education at Upsala,



Oscar II, King of Norway and Sweden

and in 1857 married Princess Sophia of Nassau. He opposed the repeated attempts to separate Norway from Sweden made by the Radicals of Norway from 1880 onwards, and more than once before the separation of 1905 averted civil war. He used the pen-name of Oscar Fredrik, and wrote a number of works in prose and verse. These included a notable *Military History of Sweden*. His biography of Charles XII was translated into English, 1879. His collected writings were published in seven vols., 1885-1902. He died Dec. 8, 1907.

Oschersleben. Town of Prussia, in Saxony. On the Bode, and a junction of the Magdeburg-Halberstadt rly., 12½ m. N.E. of Halberstadt, it has sugar-refineries, breweries, copper foundries, and machinery works. Pop. 13,000.

Oscillation. Act of swinging or moving backward and forward, or vibrating according to some law. In mathematics, oscillation is the variation of a function between limits. The centre of oscillation is a term used for a particular point in connexion with the movement of a compound pendulum.

Oscillograph. Instrument for demonstrating visibly the nature of the fluctuations of an alternating electric current. The current to be tested passes through a small coil suspended in the field of an electro-magnet energised by a current of constant intensity. The fluctuations and reversals of current in the coil make it swing to and fro. A beam of light is reflected by a tiny mirror attached

to the coil on to a second mirror moving synchronously with the coil, but on an axis at right angles to that of the coil; and thence on to a fixed screen. The spot of light traces out "wave" curves compounded of the two different motions of the mirrors; and these curves are repeated so rapidly that, owing to the persistence of vision, they appear as permanent lines of light on the screen.

Oseberg Ship. Viking ship discovered in 1904 by G. H. Gustavson, in a grave-mound at Oseberg, near Slagen, on the W. coast of Christiania Fiord, Norway. A clinker-built, single-masted vessel of oak, 71 ft. long, with richly carved stem, it was equipped with iron anchor, rope-work, chest, four-wheeled wagon, sleds, and four-poster bedstead. Designed for peaceful navigation in calm waters, it was brought ashore about A.D. 850 for use as a woman's grave-chamber. It is now in the Christiania Museum, with a somewhat longer war-galley of the same age, which was found in 1880 at Gokstad. See Viking.

Osh. Town of Turkistan. It is in the prov. of Ferghana, 55 m. N.E. of Marghilan, on the river Ak-bura, and is said to have been founded by Alexander the Great. The Throne of Solomon, a mt. in the neighbourhood, is visited by Mahomedan pilgrims. Osh, which consists of two parts, an old town and a newer one, does a trade with China. Pop. 47,000.

O'Shanassy, SIR JOHN (1818-83). Australian statesman. Born in co. Tipperary, Ireland, he emigrated to Australia in 1839 and settled in Melbourne. A prosperous business man, he entered politics, agitated against the introduction of convicts, and was one of the foremost promoters of the separation of Victoria from New South Wales, 1851. Member of the first Victorian legislative council, he became premier in 1857, remaining in office with brief intervals until 1863. He was knighted in 1874 and died May 6, 1883.

O'Shaughnessy, ARTHUR WILLIAM EDGAR (1844-81). British poet. Born in London, March 14, 1844, he obtained a post in the British Museum in 1861. Afterwards he became an assistant in the natural history department. He died Jan. 30, 1881. His works include *Epic of Women*, 1870; *Music and Moonlight*, 1874; and the posthumous *Songs of a Worker*. With his wife, Eleanor Marston, whom he married in 1873, he wrote a story, *Toyland*, 1875, a collection of stories for children. See Life, L. C. Moulton, 1894.

Oshawa. Town of Ontario, Canada. It stands on Lake Ontario, 34 m. from Toronto, and is served by the C.N.R. and C.P.R. It is connected by electric rly. with Toronto. It has a harbour and some small manufactures, and is a market for the produce of the neighbourhood. Pop. 7,400.

Oshkosh. City of Wisconsin, U.S.A., the co. seat of Winnebago co. It stands on Lake Winnebago, 80 m. N.N.W. of Milwaukee, and is served by the Minneapolis, St. Paul, and Sault Ste. Marie and other rlys., and by steamers. Lumber products, carriages, wagons, machinery, furniture, tobacco, and flour are manufactured. Oshkosh was settled in 1836, and became a city in 1853. It has been the scene of several disastrous fires, the last in 1875. Pop. 33,200.

Osiander, ANDREAS (1498-1552). German theologian. He was born at Günzenhausen, near Nuremberg, Dec. 19, 1498, ordained in 1520, and became a follower of Luther. In 1549 he became professor of theology at Königsberg. He published two treatises, *Of the Law and the Gospel*, and *Of Justification*, which involved him in controversy with Melancthon. He died Oct. 17, 1552.

Osier (*Salix viminalis*). Shrub or tree of the natural order *Amentaceae*. A native of Europe and N. Asia, it forms either a bushy shrub or a tree 30 ft. high, growing in wet places. The long, straight branches, used for wickerwork, are polished when mature. The leaves are narrow-lance-shaped, the edges waved but not toothed, and silvery beneath. The catkins, which mature before the leaves, are golden yellow. The purple osier (*S. purpurea*) does not attain the tree form, and its slender tough twigs have red or purple bark. Several other willows are grown as osiers by keeping the trunk cut close to the ground, and



Osier, in winter, showing long, straight branches

so inducing a plentiful annual growth of long slender rods. The osiers are cut in spring, when the bark peels easily, leaving the rods white. See Basket.

Osimo. City of Italy, 8 m. from Ancona. It is the ancient Auximum, colonised by the Romans in 157 B.C. Part of the old wall still exists, and there are Roman antiquities from the site of the ancient forum in the Palazzo Pubblico. The cathedral contains 13th century sculptures. Silkworm breeding is the local industry. Pop. 6,000.

Osiris. Egyptian deity. Originally the local god of Busiris, his worship developed during the Old Kingdom at Abydos, where he was traditionally interred. From being considered a virtuous benefactor, whence Egypt obtained her law and agriculture, he became, by assimilation with Ra, a sun-god. He was also identified with other gods, e.g. with Apis as Serapis and with Khons the moon-god. The son of earth and sky, he was brother and husband of Isis, and father of Horus. His brother Set, god of darkness, put him in a coffin which he threw into the Nile, and afterwards cut his body into 14 pieces and scattered them through Egypt, but Isis collected them with one exception, and either buried them separately or resuscitated Osiris by incantations. He was thus god of resurrection and eternal life, and judge of the dead. The righteous soul became an Osiris. As lord of the underworld he appears with a mummified body, wearing a plumed crown, and associated with ideas concerning the after life. Ptolemaic temples were erected to him at Canopus and Karnak. See Amenti; Egypt; Isis; Serapis.



Osiris as the moon-god

From a statue in the British Museum

Oskol. Town of Central Russia. It is in the govt., and 80 m. S.E., of Kursk, on the Oskol, a tributary of the Donetz, and the Yelets-Valuiki rly. There are soap, leather, candle, and tobacco factories, and a trade in cereals and cattle. In 1655 it was called Stari (old) to distinguish it from Novi (new) Oskol, 20 m. away on the Bielinkaya, with similar industries. Pop. 17,000.

Osler, Sir William (1849–1919). British physician. Born at Bondhead, Canada, July 12, 1849, he was educated at McGill University, London, Berlin, and Vienna. He was appointed professor of physiology at McGill University, 1874, of clinical medicine at Pennsylvania University, 1884, of medicine at Johns Hopkins University, 1889, and regius professor at Oxford University, 1905. Created a baronet in 1911, Sir William Osler wrote widely and authoritatively on nearly every aspect of medicine. He died Dec. 29, 1919. His books include *Principles and Practice of Medicine*, 8th ed. 1912, and *A System of Medicine*, 7 vols., 2nd ed. 1915.



Sir W. Osler,
British physician
Russell

Oslo. Capital of Norway. The name of Christiania (*q.v.*) was changed to Oslo as from Jan. 1, 1925.

Osman or **OTHMAN I** (1259–1326). Founder of the Ottoman empire. Born in Bithynia, he succeeded to the leadership of his clan in 1288, and gradually conquered the surrounding Turkish and Tartar tribes. Assuming the title of sultan in 1299, he founded the Osmanli or Ottoman dynasty. See *Ottoman*; *Turkey*.

Osman Digna (1836–1900). Dervish chieftain. A Hadendowa slave dealer at Suakin, he was made governor of Eastern Sudan by the Mahdi (*q.v.*), captured Sinkat and Tokar in 1883, and defeated Baker Pasha's troops at El Teb, Feb. 4, 1884, being himself defeated there by General Graham, Feb. 29, and also at Tamai, March 13. Holding the country round Suakin, he was a continual menace to the Sudan. On the defeat and death of the Mahdi, Osman was killed in a fray near Tokar.

Osmanieh. Turkish order of chivalry, in full the Nishan-i-Osmanie or Order of



Osmanieh, star of
the Turkish order

Osman. It was instituted by Abdul Aziz in 1861, and has four grades. The badge is a green star of seven points with gold knobs, and between each are three golden rays. The ribbon is of green watered silk with red stripes near the edge.

Osman Pasha (c. 1835–1900). Turkish soldier. Born in Asia Minor and educated for the army at Constantinople, he fought in the Crimea, the Lebanon, and Crete, and won the rank of marshal against the Serbians in 1876. His fame, however, rests on his defence of Plevna (*q.v.*). He was minister of war, 1878–85, and died at Constantinople, April 4, 1900. See *Russo-Turkish Wars*.

Osmanthus fragrans. Evergreen shrub of the natural order Oleaceae, native of Japan and China. It has toothed, lance-shaped, opposite leaves, and yellowish-white, four-lobed, fragrant flowers. The Chinese employ the flowers to scent tea.

Osmiridium. Alloy of the rare metals osmium and iridium. Characterised by great hardness and durability, it is used for the manufacture of fine instruments, parts of ships' compasses, and for watch pivots and other delicate mechanical parts, and also for the points of pocket pens. It is found in Tasmania, where in 1920 the output was valued at £67,987.

Osmium. Rare metal discovered in 1803 by Smithson Tennant in samples of platinum ore. Its atomic weight is 192; specific gravity 22.0; melting point about 2,500° C. (4,532° Fah.); chemical symbol, Os. It is bluish white in colour with distinct lustre. It is found, chiefly associated with platinum, in the mines of Russia, South America, California, and the East Indies, in the form of osmiridium or iridosmine.

It occurs usually in grains, distinguished by their extreme hardness and by the peculiar offensive and poisonous fumes which they give off when heated with potash. The metal is most conveniently recovered by heating osmiridium in porcelain tubes to a white heat in a current of air, when the oxide of osmium sublimes over and is collected as a powder, from which the metal may be obtained by reduction with hydrogen or carbon. The chief industrial use of the metal is in the manufacture of filaments for electric lamps. A salt of the metal has been used for the precipitation of bacterial organisms in water.

Osmosis (Gr. *ōsmos*, pushing, impulsion). Name applied to the diffusion of one liquid into another, when they are separated by

a permeable membrane. The force impelling osmosis is known as osmotic pressure. A piece of bladder or parchment is a convenient membrane to employ in the apparatus. The direction of the osmosis varies according to the composition of the liquids in the inner and outer vessels. If the osmosis be from the inner vessel to the outer, it is called exosmosis, if in the reverse direction endosmosis.



Osmanthus fragrans. Foliage and
flower of the Oriental shrub

Osmosis plays an important part in plant physiology and in chemistry. Elaborate investigations were made by Pfeffer on the osmotic pressure of sugar solutions through films of copper ferrocyanide deposited on unglazed earthenware pots. Afterwards van't Hoff established the analogy between osmotic pressure and gaseous pressure as expressed by Avogadro's law. Van't Hoff stated that the pressure is due to the bombarding of the semi-permeable membrane by the dissolved molecules trying to diffuse into the solvent and bring about a uniform concentration of the two liquids. The osmotic pressure was found to be identical with the gaseous pressure which the weight of dissolved substance would exert at the same temperature, if it were in the state of gas and occupied the volume filled by the solution.

Osmund (d. 1099). English bishop and saint. Count of Seez in Normandy, he accompanied the Conqueror to England and was created earl of Dorset. He is said to have been also chancellor of England. He embraced the religious life, and in 1078 was made bishop of Salisbury, where he built a cathedral at Old Sarum about ten years later. He wrote a *Life of S. Aldhelm*, and had considerable skill as a copyist and bookbinder. He died in 1099, and was buried in his own cathedral at Old Sarum. Canonised in 1457, his remains were removed to the new cathedral.

Osmunda. Genus of ferns, the most important of which is the royal fern (*q.v.*).

Osmundaceae. Natural order of Pteridophyta, consisting of two genera only, *Osmunda* and *Todea*. They have creeping rootstocks, and the sporangia are not covered by a pellicle (indusium), and the spore-capsules split into two valves by a vertical fissure, there being no "ring" as in the other ferns. The spores contain chlorophyll, and soon perish if they do not immediately find conditions favourable for germination.

Osnabrück. City of Hanover, Germany. Situated on the Hase, 70 m. W. of Hanover, relics of its old past include S. Mary's Church, a fine Gothic building, the R.C. cathedral with its cloisters, treasury, and relics of Charlemagne, and the town hall, wherein the treaty of Westphalia was discussed. The industries are iron and steel works, spinning and weaving, and the making of chemicals, paper, etc. It is a rly. junction, and has a trade in cattle and horses. In the 9th century Osnabrück was a walled town. It belonged to the Hanseatic League, and in the 15th century had a considerable trade. The bishopric of Osnabrück was founded in the time of Charlemagne, about 800. Its bishop soon became a rich and powerful prelate, ruling over a large area around the city. As a principality it survived the Reformation. In 1648, at the peace of Westphalia, it was arranged that it

alt., lies 40 m. S.E. of the town W of the lake Todos los Santos.

Osorrei. Town of Rumania, formerly in Hungary and known as Maros Vasarhely or by its German name Neumarkt. It stands on the Maresul (Maros) in Transylvania, 80 m. by rly. from Cluj (Kolozavar), and is the capital of Szeklerland. It contains the Teleki Library and the Szekler National Museum. There are timber and petroleum industries. Sugar, tobacco, tiles, spirits, and pottery are manufactured. Pop. 25,500.

Osprey (Lat. *ossifraga*, bone breaker). Bird of prey (*Pandion haliaetus*), known also as the fishing hawk. It is about 2 ft. long, the back and wings are dark brown, the crown of the head and the throat whitish, and the under parts white. It is found in nearly all parts of the world, except in deserts and near the Poles, but is rare in Great Britain, though it may still nest in a few secluded districts in N. Scotland. The nest, a very large structure of sticks lined with moss, is usually built in a tree, but where trees are scarce may be made on the ground or on the ledges of cliffs. It is always found near water, as the bird's food consists entirely of fish. The osprey soars to great heights, watching for its prey, on sight of which it darts down with great speed and seizes it with its claws. The so-called osprey plumes of commerce are taken from a species of egret (*g.v.*).

Ossa. Mountain of Greece, in Thessaly. It rises E. of the river Peneus, and with its neighbouring height of Pelion



Osprey. Species of the bird found in Australia

(*g.v.*) is separated from Olympus by the vale of Tempe. The chief peak is 6,398 ft. high, and is now known as Kissavos.

Osset. People of Sarmatian descent on both slopes of the Dariel Pass in the Middle Caucasus. Numbering in 1897 171,716, of Iranian speech, they are tall, frequently light-eyed and blond-haired, with Altaian head-form. Byzantine missions, Islam and modern Russian orthodoxy have not submerged their primitive animism, which is maintained more persistently than in any Aryan people outside India.

Ossett. Mun. bor. of Yorkshire (W.R.), England. It stands near the Calder, 3 m. from Wakefield, with stations on the L. & Y. and G.N. Rlys. The chief industry is the manufacture of cloth, and in the vicinity are coal mines. The fine church of Holy Trinity is modern. At South Ossett are mineral springs. Ossett was made a borough in 1890, the municipality including Gawthorpe. Market day, Fri. Pop. 14,000.

Ossian (Ir. *Oisín*). Irish hero and bard of the 3rd century. The son of Finn Mac Cumhal, he is traditionally the great poet of the Gaels, and is himself a prominent figure in hundreds of ballads and tales from the 12th to the 18th century. His fame spread to the Scottish Highlands. He fled after the Fenian defeat at Gabhra in 293. A variant of a widespread fairy tale relates that he



should be held by a Roman Catholic and a Protestant prince alternately, several of the Protestants being members of the house of Hanover. The last was George III's son, Frederick, duke of York. In 1815 its lands were added to Hanover. The modern R.C. bishopric dates from 1857. The town gives its name to the coarse linens called Osnaburps. Pop. 75,000.

Osorno. Town and volcano in Chile. The town is situated in the dept. of Llanquihue, 50 m. S.E. of Valdivia on the rly. from Puerto Montt to Santiago, in the middle of an important agricultural and industrial dist. It has trade in cereals, flour-mills, and distilleries. Pop. 7,500. The volcano, 8,725 ft.



Osnabrück, Germany. The R.C. cathedral from the north; top, left, view in the close; left to right are seen the bishop's palace, statue to Justus Möser, the patriot author, and the seminary

was lured away by the daughter of the king of the Land of Youth, where he spent 300 years, and on his return became old and decrepit. Meeting S. Patrick, he recounted the events of the past to him. *See Finn*; Gaelic Language and Literature; Macpherson, James; consult also the *Poems of Ossian*, J. Macpherson, new ed., 1896; *Ossian and the Ossianic Literature*, A. T. Nutt, 1899.

Ossification. Formation of bone. Natural ossification is the process by which the cartilage formed in the developing organism *in utero* is gradually converted into bone, and the primitive tissue of the skull is formed into the bones of the skull. Ossification also occurs in the process of repair of fractured bones, a mass of new bony tissue called callus being formed between and around the broken surfaces. In certain diseases of the joints ossification of tissue occurs, and in extreme cases the articular surfaces may become firmly united, and all movement in the joint lost. *See Bone*.

Ossington, JOHN EVELYN DENISON, VISCOUNT (1800-73). British politician. Born at Ossington,



Viscount Ossington,
British politician
After Slater

Nottinghamshire, Jan. 27, 1800, and educated at Eton and Christ Church, Oxford, in 1823 he became Whig M.P. for Newcastle-under-Lyme. He was Speaker of the House of Commons, 1857-72, when he retired and was created Viscount Ossington. The title became extinct on his death, March 7, 1873. The Speaker's Commentary on the Bible was brought out at his suggestion.

Ossining. Village of New York, U.S.A., in Winchester co. Situated on Tappan Bay, on the Hudson river, 30 m. N. of New York City, it is served by the New York Central and Hudson River rly. Just S. of the village is the Sing Sing state prison. Ossining was settled about 1700, and was incorporated in 1813. Formerly known as Sing Sing, its name was changed in 1901. Pop. 10,700.

Ossory. Name of an old Irish kingdom. It existed for nearly 1000 years, falling to pieces just before the English conquest of Ireland in the 12th century. It was part of the modern province of Leinster, roughly that now covered by King's County, Queen's County, Kilkenny, and Carlow. In 1527

Piers Butler, afterwards 8th earl of Ormonde, was created earl of Ossory, and the title is still borne by the marquess of Ormonde. Ossory is the name of a bishopric in the R.C. and Anglican churches, both cathedrals being at Kilkenny.

Ossovietz. Town and fortress of Poland, also known as Osowiec. It is on the river Bobr, 30 m. N.W. of Bielostok. Its position in the valley of the river, dominating railways and important roads, rendered it of strategic importance during the Great War.

The Germans first laid siege to Ossovietz, Sept. 25, 1914, but the swampy ground prevented them from bringing up their heavy guns, and a direct assault was impracticable. After bombarding the place for four days, having suffered considerably at the hands of the garrison, they withdrew on Oct. 1-2.

The second siege began in Feb., 1915. The Russians were again retreating from East Prussia to the line of the Bobr, and foiled in an attempt to turn the fortress, the Germans again besieged it. Heavy frost had made the terrain firm ground, and able now to bring up their heavy guns, they began to bombard it on Feb. 25. The concrete of the forts, however, withstood continual shelling, and on March 21, 1915, the Germans removed some of their batteries, and the bombardment died down. In April they made further efforts to take the fortress, but with no better success.

With the loss of Kovno, on Aug. 19, 1915, the main Russian defence of the Niemen was gone, and Ossovietz on the Bobr formed a salient. By this time the Russians in the centre were retreating all along the line, and the evacuation of Brest Litovsk was in contemplation. In these circumstances there was a withdrawal, and on Aug. 20 Ossovietz was abandoned to the Germans.

Ostade, ADRIAN VAN (1610-85). Dutch painter. Born at Haarlem, he studied under Frans Hals (*q.v.*),



Adrian van Ostade,
Dutch painter

and spent the whole of his life at Haarlem, dying there April 27, 1685. A prolific painter of peasant life, he was influenced in turn by Adrian Brouwer and Rembrandt. His brother Isaac (1621-49) painted landscapes.

Osteitis. Inflammation of compact bone. The term osteomyelitis is used when the central or

medullary cavity of the long bone is involved. The commonest cause is injury to the bone, with or without an open wound. An acute inflammation of the bone sometimes occurs in sickly children, and may follow scarlet fever. Chronic inflammation may follow an acute attack of inflammation or tuberculosis or syphilis.

Ostend (Flemish, *Oostende*). Town of Belgium, in the prov. of W. Flanders. It lies in flat country on the N. Sea coast, 14 m. W. of Bruges, with which it is connected by rly. and canal. Ostend is the principal sea-bathing resort of Belgium, attracting visitors



Ostend arms

from many countries, and has a large kursaal, racecourse, theatres, and many other attractions. The digue, which forms the chief promenade, stretches to Mariakerke, 3 m. to the W. It has also the principal fishing fleet of the seaboard, and is a seaport of importance, with cross-Channel service to Dover, and the terminus of express lines to many parts of Central Europe. Its oyster-beds are famed, and there is a local lace industry. The town is mostly modern. The hôtel de ville is an early 18th century building on the Place d'Armes; the large modern Gothic church of S. Peter and S. Paul was built in 1907. The Parc Léopold, with ornamental waters, lies in the centre of the town.

Ostend is recorded as connected by canal with Bruges as early as 1284; as a port and fishing harbour it dates from the 16th century. It suffered severely in the long siege of 1601-4, when it was captured by the Spanish general Spinola. Its fortifications were demolished in 1865. In the Great War it was occupied by the British in Aug.-Oct., 1914, and was entered by the Germans on Oct. 14, 1914. An important centre of the coastal defences and of the submarine campaign, Ostend was frequently bombarded from land, sea, and air by the Allies, and militarily important parts suffered considerably. Pop. 43,000.

Ostend, ATTACK ON. British naval operations, April-May, 1918. During the Great War the Germans used Zeebrugge and Ostend as naval bases for submarines and light destroyers. To counter their attacks the British determined to obstruct the entrance of these two harbours. On April 22 the expedition set out from Dover, and on the night of the 22nd-23rd, simul-



Ostend. Views of the Belgian watering-place. 1. The Port. 2. Part of the Digue, a promenade 3 m. long and 40ft. above the sea, with Kursaal. 3. Central railway station

taneously with the attack on Zeebrugge, an attack was made on Ostend under Commodore Hubert Lynes. The two blockships were unable to reach the entrance to the harbour, as the wind changed and the smoke screen lifted. They were blown up just outside. In this operation the destroyer North Star and four launches were lost.

On the night of May 9-10 a second attempt was made. The *Vindictive* was used as a blockship, several hundred tons of concrete being run into her hull. Aircraft and monitors cooperated, and the heavy British artillery in Flanders directed counter-battery work on the German guns. The night was windless and moonless. The *Vindictive*, handled by Commander A. E. Godsal, stood in, preceded by destroyers and motor craft, which were to spread a smoke screen and place a flarelight for her to steer by.

The vessel pushed in under a heavy German fire. As her commander laid her nose against the eastern pier and prepared to swing her hull across the channel a shell struck the conning-tower, killing him. Lieut. V. A. Crutchley tried to bring the *Vindictive* round, but she could not be moved. He, therefore, gave orders for the charges in the hull to be fired, and the vessel to be abandoned. The result of the operation was that the entrance to the harbour was not completely blocked, and the Germans later dragged the sunken

wreck towards the eastern pier, so that a channel about 30 ft. wide remained clear. The British loss was 47 officers and men killed, wounded, and missing. See Keyes, Roger; *Vindictive*; Zeebrugge; consult also Ostend and Zeebrugge, Sir R. Keyes' Despatches, ed. C. S. Terry, 1919.

Ostend Company. Trading company with headquarters at Ostend and stations on the Indian coast, established for Eastern commerce under patronage of the emperor Charles VI in 1717. Its success aroused the jealousy of England, the Netherlands, and other interested powers, which leagued to force its dissolution. In 1727 its charter was suspended by the emperor, and the company ceased to exist in 1731.

Osteology (Gr. *osteon*, bone; *logos*, science). Science pertaining to bones. See Bone; Skeleton.

Osteopathy (Gr. *osteon*, bone; *pathos*, suffering). Term used for a disease of a bone. It also refers to the treatment of disorders of bones and joints by a process of manipulation. See Bone.

Östergötland OR LINKÖPING. Län or co. of Sweden. It lies between the Baltic Sea and Lake Vätter, and contains many lakes, of which the largest is Lake Sommen. The river Motala drains a fertile plain. Cheese is the chief farm product; copper and iron are mined. Linköping is the chief railway junction. Area, 4,265 sq. m. Pop. 302,000.

Osterley House. Seat of the earl of Jersey, in Middlesex. It is one mile from Hounslow, and has a station on the Metropolitan District Rly. The first house was built by Sir Thomas Gresham in the time of Elizabeth. About 1700 the estate was bought by Sir Francis Child, and about 1760 his successor built the present house. It passed from the Childs to the earl of Jersey. The apartments include a fine picture gallery, and among the treasures are some magnificent pictures and other works of art.

Osterode. Town of Hanover, Prussia. At the foot of the Harz Mts., on the Söse, it is about 30 m. N.W. of Nordhausen. Notable buildings are the Rathaus, built 1552, St. Giles's Church, built 724 and restored after a disastrous fire in 1578, and the great corn warehouse. The town manufactures woollen and cotton goods, machinery, leather, cigars, and woodwork. It is also visited by invalids and pleasure seekers. The town was long part of the duchy of Brunswick, and was from 1361-1452 the seat of one of the branches of the ruling family. Pop. 7,500.

There is a manufacturing town, pop. 13,000, of the same name in E. Prussia. It grew up around a castle built by the Teutonic Order. Here, during the Great War, the Germans interned Russian prisoners.

Östersund. Town of Sweden. Situated on the E. side of Lake Storsjö, in the län or county of

Jämtland, it is joined with the island of Frösö by a bridge 1,420 ft. in length. It is a centre for the timber trade. Pop. 7,000.

Ostia. Ancient port of Central Italy. It was the port of Rome and stood on the S. arm of the Tiber, which now flows by a different channel farther W., 14 m. S.W. of Rome. The port is said to have been founded by Ancus Martius, and its emporium or harbour became a naval station, and imported much wheat. Portus Augusti, $2\frac{1}{2}$ m. to the N., on the N. arm of the Tiber, was founded in consequence of the silting of the S. channel, yet Ostia retained much of its earlier importance. Modern Ostia was founded in 830 by Gregory IV. The Castello was built 1483-86, but its prosperity disappeared when the N. arm was reopened in 1612; it is now the village of Osteria near the Castello. Excavations have revealed interesting details of streets, temples, store-houses, and residences. The city had also a forum and a large theatre. See Rome.

Ostraca (Gr., hard shells). Inscribed potsherds and stone slabs, principally from ancient Greece and Egypt. The British Museum contains one of those whereby Themistocles was ostracised in 471 B.C. The name has been transferred to the pottery fragments and limestone slabs, employed in Egypt for ephemeral ink-records. Many thousands have

been collected, bearing Aramaic, Greek, Egyptian, and Coptic records ranging from 400 B.C. to A.D. 900. At the Arab conquest three Christians copied the Greek gospels upon a series of numbered potsherds, whereof 20 remain. In 1910 Reisner found in the ruined palace of Omri and Ahab at Samaria about 75 potsherds with Hebrew ink-inscriptions. See Grafito.

Ostracism. Political practice introduced by Cleisthenes at Athens in 508 B.C., and subsequently employed in other Greek states. Once a year every Athenian citizen had the privilege of writing on an oyster-shell (*ostrakon*) the name of any statesman whom he thought it would be desirable to send into exile. In the event of there being 6,000 votes adverse to any statesman, the decree of banishment or ostracism, as it came to be called, took effect. The period was first for 10 years, and subsequently for five. It did not involve any loss of civic rights, and the victim could be recalled before the end of his term of exile. Noted Athenians who suffered ostracism were Miltiades, Themistocles, Aristides, Cimon, and Alcibiades, by the last of whom the practice was abolished. See Greece.

Ostracoda. Order of Entomostraca or small crustaceans. The body is unsegmented and enclosed in a bivalve carapace from which the head does not protrude. They swim by means of their

antennae, which are jointed and have brush-like terminations. In some species the eggs are carried about in the shells, and in others are laid on water plants. Most of them live in the sea, but a few species are found in fresh water, as the common cypris of British ponds. They are all carnivorous and play an important part as scavengers.

Ostrau. Twin town in Czechoslovakia, also known as Ostrava. Mährisch, or Moravian Ostrau, is on the E. bank of the Ostrawitz, across which is Polnisch, or Polish Ostrau, a town of the former Austrian Silesia. Both are interested in collieries; there are iron-works, chemical, soap, and candle factories E. of the river. Pop., M. O., 37,000; P. O., 23,000.

Ostrich (*Struthio camelus*). Largest living bird. Found wild in Africa, Arabia, and Mesopotamia, it is usually placed in the order Rati-tae or running birds, the breast-bone lacking the keel to which the strong flight muscles of most birds are attached. The wings of the ostrich are small and useless for flight. A fine specimen stands nearly 5 ft. high at the back, and its neck accounts for about 3 ft. more. In the male the plumage of the body is black, with white plumes on the wings and tail, that of the female being grey. The neck is covered with down. The legs, which are long and strong, and part of the thighs, are bare, and the feet have only two toes—a feature peculiar



Ostia, Italy. Air view of part of the ruins of the ancient port of Rome. On the left is the semi-circular theatre, beyond which are the remains of the temple attached to it; on the right is the forum

to these birds. The head is relatively small, and is broad and flattened. The beak is short and broad, and the gape very wide.

Ostriches are found in open country, specially desert, and never in wooded regions. Their speed when running with outspread wings exceeds that of any mammal; but their habit of running in great circles enables a well-mounted hunter to get within shot by cutting them off. They feed mainly on grass and leaves, but are practically omnivorous, and will swallow small mammals, birds, or reptiles. The cock bird, in the breeding season, runs with three or four hens, which lay in a common nest consisting of a shallow hole in the sand scraped by the cock. There are usually about 20 eggs in a nest, but the birds often lay a few eggs round it which fail to be hatched.

During the day the eggs are usually left to the heat of the sun, but the cock incubates them at night. In cooler weather he sometimes sits during the day as well, and is then relieved by the hens while he goes in search of food. The birds are extremely wary, and make off at the least alarm; but a male bird, if cornered, is a dangerous foe, as he can strike terrible blows with his powerful legs. The flesh of the ostrich, except when young, is unfit for food, but the eggs are highly prized by the natives.

Owing to the value of its plumes the ostrich was formerly hunted to extermination in many districts, but the same cause has now saved it from extinction. The establishment of ostrich farms dates from about 1867, and has now developed into an important industry in S. Africa, Australia, the U.S.A., Algeria, and Argentina; but attempts to introduce it to Europe have not proved very profitable. The introduction of artificial incubation has added considerably to the profit.

The birds are given a free run over a large extent of open ground, and pick up most of their food. The plumes are taken usually three times in two years, the birds being driven into small enclosures and hooded to keep them quiet. The feathers are then cut 2 ins. from the sockets, and as these are not provided with nerves the birds feel nothing. See Australia; Cassowary.

Ostrog. Town of S.W. Russia. It is in the govt. of Volhynia, on the river Goryn, 100 m. W. of Jitomir. There is trade in corn, wool, leather, timber, and sugar. It was formerly the capital of an independent Polish principality. Here the first complete old Slavonic translation of the Bible was issued in 1581. Pop. 20,000.



Ostrich. Male specimen of the African ostrich

Gambier Bolton, F.Z.S.

Ostrogojsk. Town of Central Russia. It is in the govt. and 55 m. S.W., of Voronezh, on the river Tikhaya Sosna and the Khar'kov-Balashev rly. The chief industries are the manufacture of soap, candles, oil, bricks, tobacco, and a considerable trade is carried on in grain, cattle, honey, and leather. Pop. 22,000.

Ostrogoths. Eastern branch of the Gothic people. It was formed of those Goths who remained in their seats on the Dnieper when the others, who were called Visigoths, moved W. in the 3rd century. The Ostrogoths, under Hermanaric, ruled eastward to the Don, and their supremacy was recognized far to the N.; but they were overthrown by the Huns, after whose fall they began a new era of conquest. Their power was at its highest under Theodoric. See Belisarius; Goths; Hermanaric; Rome: History; Theodoric; Totila; Visigoths.

Ostrolenka. Town of Poland. It stands on the Nareff and the Nareff rly., 20 m. S.W. of Lomza. Agriculture, hunting, and fishing are the chief occupations of the dist., where much amber is found. Here the Russians were defeated

by the French in 1807, and the Poles by the Russians in 1831. It was captured by the Germans in their offensive against Warsaw, Aug., 1915. Pop. 16,000.

Ostrovski, ALEXANDER NICHOLAEVITCH (1823-86). Russian dramatist. He was born April 12, 1823, the son of a general business agent, and found his inspiration for his earliest plays in the lives of the small traders of Moscow among whom he was brought up. His first notable comedy, *The Bankrupt*, or *Between Ourselves We Shall Settle It*, 1850, is the story of a commercial swindle. In 1853, with *Everyone in His Own Place*, the dramatist scored his second great success, and in 1860 he wrote his best play, *The Storm*, Eng. trans. C. Garnett, 1899. In 1884 he became director of the Moscow Theatre, and he died June 24, 1886.

Ostuni. City of Italy, in Apulia. It is 22 m. by rly. N.W. of Brindisi. The cathedral has a Gothic façade; the town library contains a collection of antiquities. Pop. 5,000.

Ostwald, WILHELM (b. 1853). German scientist. Born at Riga, Feb. 2, 1853, he was educated at the university of Dorpat. Special-



Wilhelm Ostwald,
German scientist

ising in chemistry, he became in 1882 professor at the Baltic polytechnic at Riga, and in 1887 professor of physical chemistry at Leipzig, resigning in 1906. He was

also visiting professor at Harvard and Columbia Universities, U.S.A., and in 1909 was awarded the Nobel prize for chemistry. The results of Ostwald's experimental work made him one of the foremost chemists of his age. Several of his works have been translated into English, among them Textbooks of General Chemistry and Inorganic Chemistry.

Ostwald's Process. Method of oxidising ammonia to form oxides of nitrogen from which nitric acid and nitrates are made. Wilhelm Ostwald, while professor of chemistry at Leipzig, worked out a process in 1900 by which a mixture of ammonia and air is passed over a catalyst, consisting of platinum with a specially prepared surface. It was the use of this process and the modifications developed during the Great War that enabled Germany to continue the manufacture of explosives after the Allies had cut off the importation of Chile nitrate.

Ostyak OR **OSTIAK.** Tartar name, meaning barbarian, for three primitive tribes in W. Siberia. The Ugra, of Finno-Ugrian stock and speech, numbering in 1911 18,591, inhabit the Ob and Irtysh banks in Tobolsk and Tomsk. The Samoyedic Ostyak, 6,559, northward to the Taz basin, are properly Samoyeds. The Yenisei Ostyak, 1,370, preferably called Yeniseians or Tubas, are aboriginal fishers and hunters, retaining an archaic Tibeto-Chinese dialect. Shamanism prevails throughout.

Osuna. Town of Spain, in the prov. of Seville. It is built on a hill on the edge of the plain of the Guadalquivir, 51 m. E.S.E. of Seville. Woollens, soap, and hats are manufactured. The castle and Gothic collegiate church crown the hill. The first has been, since 1562, the seat of the dukes of Osuna, of whom the third, Pedro, 1579-1624, achieved military distinction under Philip III; the second was built in 1534 on a Moorish substructure. The town was captured from the Moors in 1240. The university was suppressed in 1820. Pop. 16,000.

Oswald (d. 642). King of Northumbria and saint. A son of King Ethelfrith, he passed some

years in exile, being at one time in Iona. Returning to Northumbria, where a British king had killed his brother, the king of Bernicia, he crushed the invaders near Hexham in 635 and became king of both Bernicia and Deira. In 642 he was defeated and killed at Oswestry by Penda, king of Mercia. Oswald is chiefly known for his



Oswego Tea. Stem with leaves and flower whorls of the N. American herb

efforts to promote Christianity, one of his acts being to found the bishopric of Lindisfarne. He made his kingdom for a short time the most powerful in the land.

Oswald (d. 992). English prelate. A nephew of Archbishop Odo of Canterbury, who educated him, he went to France and became a monk, but was recalled about 959 and made bishop of Worcester. He founded Ramsey Abbey, Huntingdonshire, and became archbishop of York in 972, but still retained charge of the diocese of Worcester. An energetic prelate and a great encourager of learning, he died Feb. 29, 992.

Oswaldtwistle. Urban dist. of Lancashire, England. It is 3 m. by rly. from Blackburn, on the L. & Y. Rly. and the Leeds and Liverpool Canal. The chief industries are the making of cotton goods, chemicals, paper, and pottery, while around are stone quarries and coal mines. The district of Peel fold is known for its association with the Peel family. Pop. 16,000.

Oswego. City of New York, U.S.A., the co. seat of Oswego co. It stands at the mouth of the Oswego river on Lake Ontario, 36 m. by rly. N.N.W. of Syracuse, and is served by the New York Central and Hudson River and other rlys., and by the New York State Barge Canal, of which it is a terminus. A port of entry, it has a good harbour with accommodation for large vessels, and carries on a trade in coal, lumber, and grain. Manufactures include starch, corn-flour, pumps, engines, boilers, tools, woollen goods, hosiery, matches, and boxes. A fall of 34 ft. in the

Oswego river furnishes water power. Founded in 1724, Oswego was incorporated in 1828, and became a city in 1848. Pop. 23,600.

An important strategic point during the various American wars, it was fortified in 1755, captured and demolished by Montcalm in 1756. In 1759 Amherst left here with 10,000 men on his journey down the St. Lawrence to meet Wolfe at Quebec; in 1766 Sir William Johnson received here the submission of Pontiac; and it was captured by the English in 1814.

Oswego Tea (*Monarda didyma*) OR **BEE BALM.** Perennial herb of the natural order Labiatae, native of N. America. It has square, somewhat hairy stems, and opposite, oval-lance-shaped, bristly leaves, which have a mint-like odour. The bright scarlet, two-lipped, tubular flowers are arranged in one or two whorls. The bracts beneath the flowers are coloured red. The folk-name indicates a use sometimes made of its leaves.

Oswell, WILLIAM COTTON (1818-93). British hunter. Born at Leytonstone, April 27, 1818, he entered the East India Company's service in 1837, and spent the next ten years at Madras, where he developed a gift of acquiring native languages and became a skilful elephant-catcher. Visiting South Africa for his health, he spent two years exploring and hunting, accompanying Livingstone in 1849 on the journey in which Lake Ngami was discovered. Oswell hunted much big game during this expedition, as also in 1851, when he and Livingstone discovered the Zambesi. After wanderings through N. and S. America, 1855-56, he settled in England, where he died May 1, 1893. See W. C. Oswell, Hunter and Explorer, W. E. Oswell, 1900.



W. C. Oswell,
British hunter

Oswestry. Mun. borough and market town of Shropshire, England. It is 17 m. from Shrewsbury.



Oswestry arms

with stations on the G.W. and Cambrian Rlys. The chief buildings are S. Oswald's Church, restored in the 19th century, town hall, corn market, and a grammar school dating from 1407. The industries include tanning and malting, while here are the works of the Cambrian Rly. There is also an agricultural

trade. The town grew up around a monastery founded in memory of the Northumbrian king Oswald, hence its name. In Norman times, a castle, now destroyed, was built, and, being on the Welsh border, the town had a stirring existence for three centuries or so. In the 12th century it was made a corporate town. Market day, Wed. Pop. 10,000.

Otago. Prov. of South Island, New Zealand. It lies between Southland and Canterbury on the N.E. and Westland on the N.W., with a short coast-line N. of Milford Sound on the W. and a longer coast-line on the E. In the N.W. it is mountainous, containing a section of the Southern Alps, from which drains the river system of the Clutha connected with the lakes Wakatipu, Wanaka, and Hawea. The rainfall varies greatly: in the W. it exceeds 100 ins. annually; near Dunedin, the capital, it is 30 ins., and between Queenstown and Oamaru is the driest part of New Zealand, a semi-desert with less than 20 ins., where irrigation is essential. Wheat and oats are grown and sheep are reared. Gold is dredged from the Clutha gravels. Rlys. connect Dunedin with Christchurch, The Bluff, and Clyde. The estuary at Dunedin is called Otago Harbour, and the peninsula to the S.E. is Otago Peninsula.

Settlement began in 1848, when a number of Scots landed under the auspices of the Free Church of Scotland. Southland prov. was separated from Otago in 1861, in which year gold was discovered at Gabriel's Gully. Provincial administration ceased in 1875. The first shipment of frozen meat left Port Chalmers, Dunedin, in 1882. The area of Otago is 13,957 sq. m. Pop. 132,000.

Otaki. British steamer. Of 9,575 tons, built 1908, and owned by the New Zealand Steamship Co., it was sunk in action with the German raider Moewe. On March 10, 1917, the Moewe met the Otaki and ordered her to stop. This she refused to do, and although she carried only one 4·7-in. gun, and the Moewe had an armament of four 5·9-in. and one 4·1-in. guns, the Otaki fought her powerful antagonist for twenty minutes. Seeing that his ship was on fire, the captain, Lieut. A. B. Smith, put his crew in boats, but remained at his post until the Otaki went down with colours flying. For his heroism he was awarded the V.C. posthumously. See Moewe.

Otagia (Gr. *otos*, of the ear; *algos*, pain). Pain in the ear, or earache. See Ear.



Oswestry, Shropshire. Parish church of S. Oswald, restored 1893-94

Oturu. Seaport of Japan, in Hokkaido. Shut in by hills, N., W., and S., the town faces the sea on the E.; the harbour is protected on the N.W. by a small peninsula, to which a long breakwater has been added. Of recent growth both as a business centre and as a seaport, it has considerable trade with Honshu, Karafuto (Sakhalin), and Asiatic Russia. Close by are the Temiya coal pier and the Takashima Marine Products experimental station. The port is on the main rly. line of Hokkaido, 20 m. W. of Sapporo, the capital, and 159 m. N. of Hakodate. In 1872 it was only a fishing village with 4,000 inhabitants. Pop. 91,000.

Otavi. Mining centre in the N.E. of the S.W. Africa Protectorate, in Damaraland. It is connected by rail with the coast at Swakopmund and Walvis Bay. In the neighbourhood are rich deposits of copper and lead, worked by the Otavi Mining and Railways Company, at five centres—Tsumeb, Guchab, Great Otavi, Asis, and Otavi Valley.

O.T.C. Abbrev. for Officers' Training Corps (*q.v.*).

Othello THE MOOR OF VENICE. Tragedy by Shakespeare. Othello, a noble Moor in the military service of Venice, marries Desdemona, daughter of a senator. Iago, his ancient or standard-bearer, a man of mean mind and thwarted ambition, makes Othello think that Desdemona has been unfaithful. The Moor smothers his wife, and then, confronted with proof of Iago's perfidy, kills himself.

The play, the most symmetrical of Shakespeare's tragedies, is mainly domestic. It was written about 1604, acted at Whitehall, Nov. 1, 1604, and printed in quarto 1622 and 1630, and in the first folio of 1623. Based on Cinthio's Hecatommithi, iii, 7, and in 5 acts, its text varies, but as usually printed it contains 3,324 lines, including 541 of verse, 2,672 of blank verse, and 86 pentameter rhymes. Apart from Edmund Kean, who

appeared at Drury Lane, May 5, 1814, as Othello, and on May 7, 1814, as Iago, and Henry Irving, who alternated the parts of Othello and Iago with Edwin Booth, at The Lyceum, May, 1881, the outstanding modern interpreters of the Moor have been Italian—Tomasso

Salvini, Drury Lane, April 1, 1875; and Giovanni Grasso, The Lyric, March 21, 1910. See Aldridge, I. F.: Desdemona; Iago.

Otho, MARCUS SALVIUS (A.D. 32-69). Roman emperor. He joined Galba in the rising against Nero, but, disappointed at not being designated as Galba's successor, took advantage of the latter's unpopularity to form the conspiracy which resulted in his murder. Otho was proclaimed emperor Jan. 15, 69, but in the same month Vitellius was also proclaimed emperor by the legions in Germany. The rival forces met at Bedriacum, where Otho was defeated, and he put an end to his life, April 16, 69.

Otira Gorge, Pass in the Southern Alps, New Zealand. Connecting the provinces of Canterbury and Westland in South Island, it rises to a saddle, Arthur's Pass, 3,030 ft., between peaks, of which Mt. Barron, on the S., has an alt. of 5,660 ft. Since 1865-66 the gorge has been crossed by a road made in the days of the boom of the Westland gold diggings and since used by coaches. A tunnel, 5½ m. in length, was cut, and a rly. through the gorge started.

Otitis. Inflammation of the organ of hearing. It may attack the outer ear, the middle ear, or the internal ear, and in all cases it produces deafness. In the two former conditions the deafness is known as conduction deafness; in the latter as nerve deafness. These two varieties of deafness can easily be distinguished by holding a vibrating tuning-fork opposite the ear. When the note is just inaudible in this position, the end of the fork is placed on the bone behind the ear. If it is again heard the deafness is conduction deafness; if not it is nerve deafness.

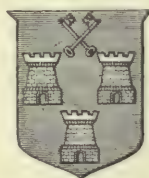
External otitis is an inflammation of the skin of the outer ear. There is some discharge from the skin, of clear fluid containing scales, which are moistened and loosened by the discharge. The deafness is slight. There is some

pain, but more often considerable itching in the ear, which should be frequently syringed with weak borax and water, dried, and smeared with zinc ointment.

Otitis media is an inflammation of the middle ear. It may be a dry or moist inflammation without the formation of pus (catarrhal otitis media), and occurs more often at or past middle life, and in rheumatic subjects. The condition is aggravated by any catarrh of the nose and throat, which should be carefully treated if present. Should the inflammation attack the mastoid process it may spread to the brain. As it may attack the brain indirectly, with fatal consequences, its prevention and cure are of real importance. Children with enlarged tonsils and adenoids should have them treated as early in life as possible. Great care should be taken to keep the nose and throat clean during an attack of scarlet fever or measles. Inflammation of the mastoid, indicated by pain, tenderness, and sometimes swelling behind the ear, demands urgent operative treatment.

Internal otitis is occasionally the result of syphilis, and is sometimes caused by mumps. Otitis media may spread into the inner ear and produce it. *See Ear.*

Otley. Market town and urban dist. of Yorkshire (W.R.), England. It stands on the Wharfe, 10 m. from Leeds, with stations on the Mid. and N.E. Rlys. The chief building is the restored Perpendicular church of All Saints, containing monuments to the Fairfax family, whose seat, Denton Park, is in the neighbourhood. There is a grammar school founded in the 17th century. The town has an agricultural trade and manufactures of machinery and leather goods. In the vicinity are stone quarries, and just outside the town is the Chevin Hill, 925 ft. At one time Otley sent two members to Parliament. Market day, Fri. Pop. 9,800.



Otley arms

Otoliths. Ear stones, or chalky concretions in the inner ear of many animals. They are more or less loose in the fluid of the internal ear, and their function seems to be to stimulate the auditory nerve by their vibrations. They are best seen in the fishes, where they are often large and porcelaneous, as in the cod tribe. They occur in other vertebrates and in certain molluscs.

Otology (Gr. *otos*, of the ear; *logos*, science). *See Ear.*

Otomi. Group of American Indian tribes in the Mexican states of Guanajuato, Hidalgo, and Mexico (nomads). They numbered 209,640 in 1910, besides the allied Mazahua, 65,928, and the Chichimec, 1,673. Small, dark, roundish-headed, they represent the primitive inhabitants of the Anahuac plateau, who were driven into the uplands by the Nahuatl (Aztec) invaders, and they still preserve their pre-Toltec culture.

Otranto. British armed merchant cruiser. She formed part of Cradock's force at the battle of Coronel (q.v.). On Oct. 6, 1918, she collided with the Kashmir, off the Irish coast, and sank. Both vessels were carrying American troops. About 400 persons were lost, including 335 soldiers. The Kashmir reached port.

Otranto. City of Italy, in Apulia. It is on the S.E. coast on the strait of the same name, 45 m. S.E. of Brindisi, with which it is connected by rly. It was destroyed by the Turks in 1480. The cathedral contains a remarkable mosaic pavement of 1166; the church of San Pietro has Byzantine frescoes. The castle, built by Alphonso of Aragon and strengthened by Charles V, gives its name to a romance by Horace Walpole, published in 1764. Pop. 2,300.



Otranto, Italy. Ruins of the castle built, about 1450, by Alphonso of Aragon

Otranto, STRAIT OF. Outlet of the Adriatic Sea between S. Italy and Albania. It is 40 m. wide; a cable connects the ports of Otranto and Avlona. During the Great War it was closely patrolled by an Allied squadron, and a number of British drifters guarded the nets and mines laid there for the purpose of stopping enemy submarines. Two attacks were made on the drifters, on July 9, 1916, and May 15, 1917,

when a number were lost. *See Adriatic Sea, Operations in the.*

Otsu. City of Japan, in Honshu. Situated on the S. shore of Lake Biwa, 10 m. by rly. E. of Kyoto, it is a centre for the local hemp industry. Pop. 43,000.

Ottakar. Name of two kings of Bohemia. Ottakar I, who belonged to the family of the Premyslides, made himself king in 1192, but had to fight hard before his position was generally recognized. He took part in the contest for the German throne between Otto IV and Philip of Swabia. Dying in 1230, his suc-



S.S. Otranto, the British merchant cruiser sunk off the Irish coast, Oct. 6, 1918

Abraham, Devonport

cessor was his son Wenceslaus. Ottakar II, a grandson of Ottakar I, began to reign in 1253. He had already taken part in public affairs, had made himself duke of Austria, and led a faction against his father Wenceslaus. By force of arms he added to Bohemia the duchies of Styria and Carinthia, and in 1273 had a good chance of being chosen German king. Rudolf of Hapsburg, however, was preferred, and war broke out. Ottakar was beaten

and compelled to surrender all his lands save Bohemia and Moravia. Trying to recover them, he was killed in battle, Aug. 26, 1278.

Ottava Rima. The standard measure of Italian heroic verse. It is a stanza of eight iambic pentameter lines, the first six of which rhyme alternately, and the last

two are a couplet with a third rhyme. Lord Byron's Don Juan is the classic English example.

Ottawa. River of Canada, tributary of the St. Lawrence. It rises in the lakes in the W. of the prov. of Quebec, and flows W. to Lake Temiscaming. Turning E., it forms the boundary between Ontario and Quebec, passes the cities of Ottawa and Hull, and joins the St. Lawrence by two branches

at Montreal. Its length is 780 m. It is partly navigable, and has been made more so by the construction of short canals. Its several falls, notably the Chaudière and Rideau, supply water power for electricity. The Rideau Canal connects it with Lake Ontario. Its chief tributaries are the Gatineau, Lièvre, Coulange, Madawaska, and Rideau; most of them are lumbering streams.

Ottawa. City and capital of Canada. It is in Carleton county, prov. of Ontario, at the point where



Ottawa arms

the Rideau joins the Ottawa, 116 m. from Montreal, and is served by the C.P.R., G.T.R., C.N.R., and New York Central Rly. Electric rlys. run through the

city and connect it with its suburbs and with Hull across the Ottawa.

The fine parliament house was burned down in Feb., 1916, but was rebuilt. The prominent feature of the new building is its great tower, called the Tower of Peace, in which a memorial chamber, commemorating Canada's 60,000 soldiers who fell in the Great War, is to be erected. In 1921 a replica of the chair in the British House of Commons, the gift of the Empire Parliamentary Association, was formally presented by Lord Ullswater, the ex-Speaker of the House. The National Museum, art gallery, observatory, and Rideau Hall, the official residence of the governor-general, are notable buildings. There are Roman Catholic and Anglican cathedrals, many churches and schools, a university, and fine parks.

Largely a residential city, Ottawa is also a centre of the lumber industry, and there are manufactures of machinery, flour, paper, etc. The falls near the city provide plentiful water power. Ottawa was founded about 1829 as a residence for British engineers who were working in the neighbourhood, and was called Bytown. In 1854 its name was changed to Ottawa, an Indian name, and its importance began when it was selected as the capital of the Dominion on its foundation in 1867. In 1911 its population was 87,062; it is now about 135,000, suburbs included.

Ottawa, UNIVERSITY OF. Canadian educational institution at Ottawa. A R.C. establishment, it is conducted by the Oblate Fathers of Mary Immaculate. It was incorporated in 1849 as the college of Bytown, the old name of Ottawa. In 1861 it became the college of



Ottawa, Canada. Plan of the capital of the Dominion

Ottawa, and in 1866 a university. Its chief departments are arts, philosophy, and theology, and it is equipped with museums, laboratories, and a library.

Ottelia. Small genus of aquatic perennial herbs of the natural order Hydrocharitaceae. They are natives of tropical and sub-

tropical regions. They have submerged and floating leaves (the latter heart-shaped) and six-parted flowers. *O. indica* is used as a pot-herb in India.



Ottelia. Flowers and heart-shaped leaves of the aquatic herb

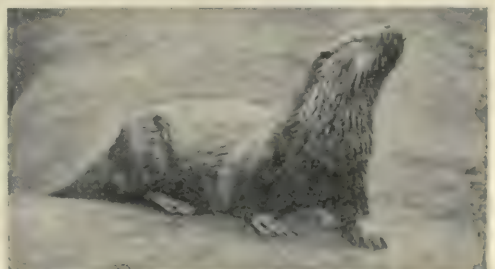
tropical regions. They have submerged and floating leaves (the latter heart-shaped) and six-parted flowers. *O. indica* is used as a pot-herb in India.

Otter (*Lutra*). Aquatic carnivorous fur-bearing mammal, belonging to the family Mustelidae. Widely distributed, being found in Europe, Asia, and America, it is usually about 2 ft. long in body

with a tail 18 ins. long, and is catlike in general form. It has thick brown fur, which is of considerable commercial value, especially in the American species. The feet are webbed, and the long flattened tail assists in swimming. Otters are not uncommon in secluded waters of Great Britain; but the havoc they work among the fish, of which they kill more than they need, causes them to be remorselessly persecuted. They live in burrows in the river banks, but frequently descend to the sea, where they feed upon molluscs, crustaceans, and fish.

Otter hunting, which was an organized sport in the time of Henry II, takes place from May to Oct., the only form of hunting carried on during the summer in the United Kingdom. It is conducted on foot with otter-hounds (q.v.), of which there are a considerable number of packs in England and Wales, and a few in Scotland and Ireland.

Otter, SIR WILLIAM DILLON (b. 1843). Canadian soldier. Born Dec. 3, 1843, and educated at Toronto, he



Otter. Common species of the aquatic mammal found in Great Britain
W. S. Burridge, F.R.S.

served many years in the Canadian militia, took part in the operations against the Fenian Raid in 1866, and



Sir William Otter,
Canadian soldier
Elliott & Fry

1910-12, and was knighted in 1913.

Otterburn. Village of Northumberland, England. It is 31 m from Newcastle, on the Rede, in Redesdale. There is a modern church, S. John the Baptist; Otterburn Tower occupies the site of an ancient one. The village is famous for the battle fought between the Scots and English, Aug. 19, 1388. The invading Scots, under James, earl of Douglas, were retreating northwards from Durham and encamped on a hill near Otterburn. They were attacked in moonlight by Sir Henry Percy (Hotspur) and his brother Ralph, both of whom were taken prisoner. Douglas was slain, but the Scots proved victorious. The ballad of Chevy Chase (*q.v.*) describes an otherwise unknown fight, often confused with this.

Otter Hound. Breed of dog descended from the old Southern hound of Great Britain. The true otter hound much resembles the harrier in general appearance, but has large broad feet and a rough thick coat of rather greasy hair.



Otter Hound. Champion type of the breed of dog used in otter hunting

Many so-called otter hounds are modified foxhounds. The otter hound possesses good scent and keen sight. It is a powerful swimmer and has great endurance, faces its quarry gamely, and is of a savage disposition. Its colour varies greatly, and its height should be 22 or 23 ins. *See Dog, colour plate.*

Ottery St.

Mary. Urban dist. and market town of Devonshire, England. It stands on the Otter, 12 m. from Exeter, with a station on the L. & S.W. Rly. It is noted for its beautiful church, S. Mary's, with two transeptal towers and other features of interest; one of the most magnificent churches in the country, it dates from the 13th and 14th centuries. Ottery was the birthplace of the poet Coleridge. The grammar school at which he was educated was pulled down in 1884. Honiton lace is manufactured. Ottery figures in Pendennis as Clavering St. Mary. Market day, alternate Tues. Pop. 3,700.

Otto I, THE GREAT (912-973). German king and Roman emperor. He was born Nov. 23, 912, son of Henry the Fowler, whom he succeeded in 936. At first virtually little more than duke of Saxony, he ended by restoring the empire of Charlemagne.

Even in Saxony Otto was confronted by opposition, developed by his brother Henry and his half-brother Thankmar into a formidable conspiracy, in which the dukes of Lorraine and Franconia were also concerned. Having crushed this, Otto proceeded to get the great duchies, as far as possible, into the hands of his relatives, with even worse results. His son Ludolf in Bavaria and his son-in-law Conrad in Lorraine organized another great conspiracy, in the course of which Otto's throne was shaken, and he himself was taken prisoner, but once more he prevailed. Otto conducted a short and successful war against the king of France about the possession of Lorraine, secured his people from external foes, and made a landmark in medieval history by his great victory over the Magyars on the Lechfeld in 955. Before his death the rulers of Bohemia, Poland, and Denmark all did homage to him.

In 951 Otto went to Italy, and Berengar, sometimes called king of Italy, did homage to him; but



Ottery St. Mary, Devonshire. Parish church of S. Mary, with the tower of the south transept on the left

Frith

his position there was dubious until a second visit in 961. He was then crowned emperor by the pope, Feb., 962. Otto, who did much for the organization of the Church, died May 7, 973. He was twice married, his first wife being Edith, daughter of the English king, Edward the Elder.

Otto II (955-983). German king and Roman emperor. Son of Otto the Great by his second wife Adelaide, he was crowned king when only six years old. His father thus marked him out as his successor, and with the same motive had him crowned joint emperor in Rome in 967. In 973, on his father's death, Otto became ruler of Germany and Italy, and his ten years' reign was spent in warfare. Otto, who died in Rome, Dec. 7, 983, married Theophano, daughter of the East Roman emperor Romanus II.

Otto III (980-1002). German king and Roman emperor. He succeeded his father Otto II at the age of three, and was trained by his Greek mother Theophano to despise the Germans. Crowned by Pope Gregory V in Rome, May 21, 996, Otto endeavoured to revive the ancient conception of the Roman empire. He checked German ascendancy by strengthening the Poles and Hungarians, suppressed the revolt of the Roman Crescentius, whom he put to death 998, and made his tutor Gerbert pope as Sylvester II, 999. He was driven from Rome by the Italians, and died Jan. 23, 1002.

Otto IV (1174-1218). German king and Roman emperor. The second son of Henry the Lion, duke of Bavaria and Saxony, and of Matilda of England, after the death of the emperor Henry VI he was elected German king at Cologne, June 9, 1198, by the Guelph party, in opposition to Philip of Swabia. On Philip's murder in 1208 Otto was elected emperor,



Otto I,
German king



New Parliament Buildings, as rebuilt after the fire of Feb., 1916. The top picture shows the central part of the city at Château Laurier Bridge over the Rideau Canal, with the Royal Alexandra Bridge across the

Ottawa River in the distance. In the left foreground is the Post Office, behind which rise Parliament Buildings on Parliament Hill. On the right are the Château Laurier Hotel and the Central railway station

OTTAWA : THE CAPITAL CITY OF THE DOMINION OF CANADA

and crowned in Rome, Oct. 4, 1209, but in the next year was placed under the ban for seizing papal territory, and was deposed by the Hohenstaufen party, who set up Frederick II. Otto was beaten at Bouvines by the French, 1214, and died May 19, 1218.

Otto I (1848-1916). King of Bavaria. Born April 27, 1848, second son of Maximilian II of



Otto I,
King of Bavaria

as regent until his death in 1912, when it was decided to depose the King as incurably insane, in favour of his cousin Louis III. Otto died Oct. 13, 1916.

Otto I (1815-67). King of Greece. Born June 1, 1815, the second son of Louis I, king of Bavaria, he was invited, in accordance with the London protocol of May 7, 1832, to accept the throne of liberated Greece, Feb. 6, 1833. In 1836 he dismissed the unpopular



Otto I,
King of Greece

Bavarian Armansperg, who had been chief of the council of regency during his minority. The revolution of Sept., 1843, compelled the king to call a National Assembly charged to draw up a constitution, but this step failed to secure a stable government. His difficulties were increased by a brief rupture of relations with Turkey in 1847. Military plots against the monarchy in 1861 and early in 1862 failed, but on Oct. 21 an insurrection led to the abdication of Otto, who retired to Bavaria. He died at Bamberg, July 26, 1867. See Greece.

OTTO OR ATTAR OF ROSES (Arab. *ytr*, perfume). Volatile scented oil distilled from roses, chiefly *Rosa damascena* and *moschata*. The flowers are gathered in the early morning before they are fully blown. The chief centres of the industry are Kashmir, Ghazipur, Shiraz, Damascus, S. France, and Kazanluk in Bulgaria. An acre of ground produces about 100 lb. of flowers daily during the height of the season, which lasts three or four weeks. 188-300 lb. of flowers

yield one ounce of oil. Otto of roses is used in scents, medicines, lotions, and ointments.

Ottoman. Kind of couch or divan without back or arms. Of Turkish origin, it became fashionable in England about 1800. One form was a long box with a cushioned lid, another was a foot-rest.

Ottoman. Name of the dominant Turkish people. It is derived from Osman, who about 1290 became the leader of a tribe living under the protection of the Seljuks. Having won a great reputation as a fighter, he declared himself independent, and is regarded as the founder of the Turkish or Ottoman Empire, for his tribe, known as the Ottoman Turks, entered on their career of conquest, and in 1453 planted themselves at Constantinople. See Turkey.

Ottrelite OR CHLORITOID. In mineralogy, name given to a variety of brittle micas. See Chloritoid.

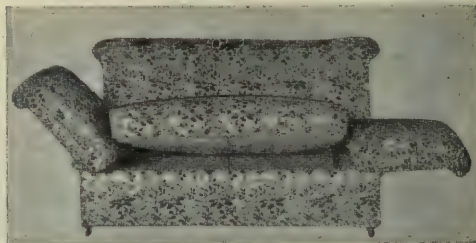
Ottumwa. City of Iowa, U.S.A., the co. seat of Wapello co. It stands on both banks of the Des Moines river, 76 m. by rly. W.N.W. of Burlington, and is served by the Chicago, Milwaukee and St. Paul and other rlys. Industries include the manufacture of iron and steel, agricultural implements, wagons, flour, paper, cigars, bricks, and tiles. It has several meat-packing houses, and carries on a large trade in agricultural produce and coal. Ottumwa was settled in 1843, incorporated in 1849, and became a city in 1857. Pop. 23,000.

Otway, THOMAS (1651-85). English dramatist. He was born at Trotton, Sussex, March 3, 1651, and educated at Winchester and Christ Church, Oxford. In 1675 appeared his first play, the tragedy of Alcibiades, which had some success chiefly owing to the fine acting of Mrs Barry, with whom Otway fell in love. Her cruel treatment of him drove him first into the army and a campaign in Flanders with a cornet's commission, and latterly to a life of degrading dissipation. He died in utter destitution, April 14, 1685. Otway's best known play is the great tragedy Venice Preserved,



Thomas Otway,
English dramatist

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Ottoman. Modern kind of couch, with adjustable head and foot

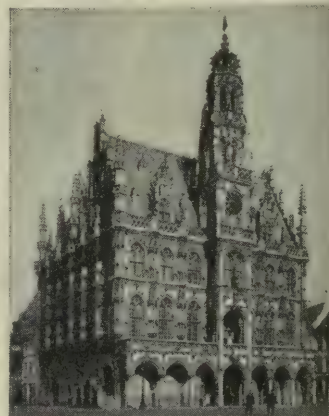
By courtesy of Waring & Gillow

1682, in which he shows himself a master of pathos and passion. Another fine tragedy is *The Orphan*. He also wrote several comedies, of which the most interesting is *The Soldier's Fortune*, 1679. See *Works and Life*, ed. T. Thornton, 1813; *Seventeenth Century Studies*, E. W. Gosse, new ed. 1914.

Oubliette (Fr. *oublier*, to forget). Medieval term for a pit or well constructed in the masonry of a castle dungeon, and used for the close confinement of prisoners. Oubliettes were also used for the secret disposal of prisoners' bodies. See Castle.

Oudenarde OR AUDENARDE. Town of Belgium. In the prov. of E. Flanders, it is 10 m. from Ghent, and is built on both sides of the Schelde. Its chief building is the town hall, a beautiful 16th century edifice with a tower in five storeys, reputed the finest hôtel de ville in Belgium after that of Brussels, or, until destroyed, of Louvain. The chief churches are S. Walburga's and Notre Dame. Pop. 7,000.

Oudenarde, BATTLE OF. Fought July 11, 1708, between the British and their allies and the French. The former had a small garrison in Oudenarde, which was being attacked by a French army under Vendôme. This occupied a position



Oudenarde, Belgium. The 16th century town hall, on the N. side of the Grande Place

behind the Norken, a tributary of the Schelde. Marlborough decided to fight at once. He sent an advanced body across the Schelde, and the opening encounters took place just across that river while the rest of the allied force was crossing it.

The allied crossing had not been completed when the duke of Burgundy, who shared the command with Vendôme, ordered his army forward, and in the angle formed by the Schelde and the Norken the main engagement was fought out, chiefly by the infantry. A French attempt to disorganize the allies before they were in order of battle failed, and the French found themselves half encircled. A turning movement made by some Dutch troops against the French right completed their discomfiture. The left wing withdrew in good order and covered the withdrawal of the rest, and a rout was averted by the oncoming of night. The allied army—British, Hanoverian, Prussian, and Dutch—was, perhaps, 30,000 strong, and lost about 3,000 killed and wounded. The French, who numbered perhaps 40,000, lost 15,000, including prisoners. *See Spanish Succession, War of the.*

Oude Rijn. River of the Netherlands, one of the branches of the lower Rhine. At Utrecht the Kromme Rijn divides into the Vecht and the Oude Rijn (Old Rhine), the latter flowing W. through the provs. of Utrecht and S. Holland to reach the North Sea at Noordwyk. *See Leiden; Rhine.*

Oudh. Eastern portion of the United Provinces of Agra and Oudh, India. It lies between Nepal and Central India and between Agra and Bihar. Lucknow is the capital. In ancient days a flourishing kingdom, later successively under the sway of the Afghan and Mogul emperors, it became independent about 1732. In 1856 Lord Dalhousie deposed the king of Oudh for continued misgovernment, and his territory was incorporated in what were then called the North Western provinces. Its area is 24,158 sq. m. Pop. 12,558,000. *See Ajodhya; United Provinces.*

Oudinot, CHARLES NICOLAS (1767-1847). French soldier. Born at Bar-le-Duc, April 25, 1767, he entered the army in 1784, but soon retired. On the outbreak of the Revolution he rejoined and, having seen a good deal of service, became a general in 1794. As general and chief of the staff to Masséna, he added greatly to his reputation, was made inspector-general of infantry, and sat in the chamber of deputies. In 1805, in command of his division, the grenadiers, Oudinot

had a large share in the victory of Austerlitz; he was also at Friedland, while for his conduct at Wagram



Marshal Oudinot, French soldier

Napoleon made him a marshal. Having been governor of Holland, 1810-12, he was in the Russian campaign and at Leipzig, but in 1814 he went over to the Bourbons, to whom he remained faithful during the Hundred Days. In 1823 Oudinot led an expedition into Spain. He died Sept. 13, 1847. Napoleon made him duke of Reggio, and other honours were given to him by Louis XVIII. His son Charles, duke of Reggio (1791-1863), served under Napoleon, and in 1849 was in charge of the French army that took Rome and restored the temporal power of the pope.

Oudtshoorn. Town of the Cape Province, S. Africa. It stands on the Grobelaars river, a tributary of the Olifants, 277 m. by rly. from Port Elizabeth. The chief buildings are several churches, public library, drill hall, hospital, and theatre. Oudtshoorn is the centre of a prosperous agricultural district in which fruit and tobacco are grown and ostriches are reared. To the N., 18 m. away, are the Congo Caves, perhaps the finest stalactite caverns in the world. Pop. (whites) 5,000.

Oughter. Lough or lake of Ireland. In the N. of co. Cavan, it contains a number of small islands. It is fed and drained by the river Erne, and measures 4 m. in length and 3 m. in breadth.

Ougrée. Town of Belgium, in the prov. of Liège. It lies on the right bank of the Meuse, 2½ m. S.W. of Liège. It has busy metal and coal industries, and is a centre of the Liège-Seraing industrial area. Pop. 13,000.

Ouida. Pen name of Marie Louise de la Ramée (1839-1908), British novelist. Born Jan. 1,

1839, at Bury St. Edmunds, she was the daughter of Louis Ramé, a teacher of French. She began to write at about the age of 20 under the influence of Harrison Ainsworth, and wrote some 40 novels, including *Strathmore*, 1865; *Under Two Flags*, 1867; *Moths*, 1880; and



Ouida

The Massarenes, 1897; and a number of short stories and essays of merit. At one time she enjoyed great popularity, but her vogue diminished, and she died in poverty at Viareggio in Italy, Jan. 25, 1908. Ouida had great intellectual gifts and in unusual degree the faculty of telling an interesting story. She was passionately devoted to dumb animals.

Ouija (Fr. *oui*, yes; Ger. *ja*, yes). Apparatus used in occult experiments. It is a board on which the alphabet and various conventional signs are written, and is used for receiving automatic messages. *See Planchette; Spiritualism. Pron. Wee-ya.*

Oules, WALTER WILLIAM (b. 1848). British artist. Born at St. Helier, Jersey, Sept. 21, 1848, he



W. W. Oules, British artist
Elliott & Fry

was educated at Victoria College there. Having decided on an art career, he began in 1865 to study at the R. A. schools. He first exhibited at the R. A. in 1869,

was elected A.R.A. in 1877, and R.A. in 1881. His works are mainly portraits.

Oulton. Village and lake of Suffolk, England. The village is 2 m. from Lowestoft, on the G.E.R. Rly. S. Michael's Church has some Norman work remaining. Borrow lived for many years in the village. Oulton Broad is visited for yachting and angling, as is Lake Lothing between it and the sea. Pop. 4,100.

There are several other Oultons in England. One is near Leeds, others are in Staffordshire and Norfolk, while Oulton Park, Tarporley, Cheshire, is the seat of Sir P. de Grey Egerton.

Ounce. Measure of weight. In Great Britain it is the 12th part of a pound troy, and the 16th part of a pound avoirdupois. A fluid ounce is a measure of capacity, and equals one avoirdupois ounce of distilled water at 62° F. The ounce troy contains 480 grains, and the ounce avoirdupois 437½ grains. *See Weights and Measures.*

Ounce or **SNOW LEOPARD** (*Felis uncia*). Species of leopard. Found in the mountainous districts of Central Asia, it reaches a length of seven ft. and differs from the true leopard in its long woolly fur, whitish-grey colour, large spots, and arched skull. It never descends to the plains, and preys mainly upon wild sheep and goats. *See Leopard.*

Oundle. Urban dist. and market town of Northamptonshire, England. On the Nene, 30 m. from Northampton and 13 m. from Peterborough, it has a station on the L. & N.W. Rly. The chief building is the church of S. Peter, a fine old edifice with a lofty spire and some interesting architectural features. The Talbot Inn was built partly from materials brought from Fotheringhay. Brewing is an industry. There is an agricultural trade, and an important horse and cattle fair is held annually. Oundle was a market town before the Norman Conquest, and a place of some importance through the Middle Ages, though it never secured incorporation. Market day, Thurs. Pop. 2,700.

Oundle School. English public school. It was founded under the will of Sir W. Laxton, lord mayor of London, who, dying in 1556, left some property in the city of London to the Grocers' Company for the purpose. It was a country grammar school until the 19th century, when, the estates having greatly increased in value, the Grocers' Company began to enlarge it, and many new buildings were erected from 1883 onwards. There is now accommodation for 500 boys in ten houses. The buildings include chapel, great hall, and library, and there are 90 acres of playing fields. The foundation also supports another school, the Laxton School.

Our Boys. Comedy in three acts, by H. J. Byron. It was produced at the Vaudeville Theatre, London, Jan. 16, 1875, where it had a run of 1,362 performances. The leading part, that of a retired butler named Perkyn Middlewick, was played by David James.

Ourisia. Small genus of perennial herbs of the natural order Scrophulariaceae. Natives of S. America and New Zealand, they have large, notched leaves, chiefly springing from the rootstock, and long tubular flowers with acutely lobed mouths.

Our Mutual Friend. Charles Dickens's thirteenth novel. It was published in monthly parts (May, 1864–Nov., 1865), with illustrations by Marcus Stone, R.A. Dealing with London riverside life and parvenu society, its story is that of John Harmon, who pretends to be dead in order to test the character of Bella Wilfer, whom his father wished him to marry. The leading characters include Nicodemus Foffin, the "golden dustman"; the wooden-legged ballad-monger Silas Wegg; the pompous Podsnap; Eugene Wrayburn, a barrister who designs the fall of

and finally marries Lizzie Hexham, one of Dickens's most successful heroines; the parvenu Veneerings and the fortune-hunting Lammles. The story was dramatised by H. B. Farnie in 1866 under the title of *The Golden Dustman*.

Ouro Preto. Town of Brazil, in Minas Geraes. It occupies the slopes of a mountain, and wheeled traffic is impossible in its streets. It was founded in 1699 and called Villa Rica from gold mines, now practically exhausted. It was the capital of the state until superseded in 1897 by Belo Horizonte. It contains a school of mines, the oldest theatre in Brazil, and has rly. connexion with Rio de Janeiro. Pop. 14,000.



Oundle School, Northamptonshire. Main buildings of the school governed by the Grocers' Company of London

Ourthe. River of Belgium. Rising E. of Gouvy, it flows through the prov. of Luxembourg, first W. then N., and joins the Meuse near Liège, which was the capital of a French dept. called Ourthe under Napoleon I. The Aisne, Ambève, and Vesdre are tributaries. Its total length is 103 m., and it is navigable for about 36 m.



Ourisia. Foliage and flower spike of the perennial herb

Ouse. Name of several English rivers. It is a Celtic word meaning water, the same root being in Esk.

Ouse. River of Sussex, England. It rises in the county between Horsham and Cuckfield, and flows mainly S. past Lewes, where it cuts through the S. Downs to the English Channel at Newhaven. Its length is 30 m., of which about 25 are navigable for small vessels.

Ouse. River of Yorkshire, England. It is formed by the Ure and the Swale, which unite near Boroughbridge. Thence, as the Ouse, it flows past York, Selby, and Goole to the Trent, with which it unites at Faxfleet, below Goole, to form the Humber. The length is 60 m., and it is navigable to York, 45 m.

from its mouth. Its chief tributaries are the Nidd, Wharfe, Aire, Don, and Derwent. See Humber.

Ouse, GREAT. River of England. It rises near Brackley in the S.W. of Northamptonshire and flows, mainly E., through Buckinghamshire, Bedfordshire, Huntingdonshire, Cambridgeshire,

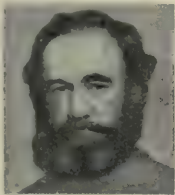
and Norfolk to the Wash, 2½ m. below King's Lynn. Its chief tributaries are the Ivel, Cam, Lark, Ouzel, and Little Ouse, and its length is 158 m. It is navigable to Bedford; other places on its banks include Stony Stratford, Huntingdon, and King's Lynn. Two artificial channels, called the old and the new Bedford rivers, cut off a large bend of the Ouse between the E. border of Huntingdon and Downham Market. The last 3 m. of its course is another artificial channel. It is tidal for 16 m. The extensive drainage system is controlled by a board with headquarters at Cambridge. See Ouse's Silent Tide, C. F. Farrar, 1921.

Outcrop. Geological term applied to the edges of strata which appear at the surface. See Rocks.

Outlawry. Exclusion from the protection of the law. It is actually obsolete in civil procedure, and practically obsolete in criminal procedure. It used to take place when anyone wilfully avoided the execution of process in the king's courts. He was civilly dead, his property was forfeited, and he could acquire no rights. At one time, he could be killed at sight; but the right of slaying outlaws early passed away.

Outposts. Troops detached for the protection of a force at rest. Infantry furnish piquets and supports who hold the outpost line of resistance. Cavalry and cyclists keep the enemy under observation, by means of patrols, who move out before dawn, at which time the infantry stand to arms. Outposts fight only to gain time for the main body to get under arms and move to the position which the commander has selected for defence. They are withdrawn when the main body marches, and the duty of protection is then assumed by the advanced guard, flank guard, and rear guard.

Outram, Sir James (1803-63). British soldier and administrator. Born at Butterley Hall, Derbyshire, Jan. 29,



After T. Brigstock

1803, he joined the East India Company in 1819. He took part in the British campaign in Afghanistan, 1839, was at the capture of Ghazni, and rode in disguise from Kalat to Karachi, over 350 m. In 1843 he defended Hyderabad against a strong force of Baluchis. He was appointed chief commissioner of Oudh, and in 1857 commanded the Persian expedition. In the Indian Mutiny he joined Havelock on Sept. 15, helped to relieve the residency at Lucknow, and held it until relieved by Sir Colin Campbell. He was made a baronet, and is known as the Bayard of India. Outram died March 11, 1863, and was buried in Westminster Abbey. See Indian Mutiny; consult also Lives, Sir F. J. Goldsmid, 1880; L. J. Trotter, 1903.

Outrigger. Light boat, sometimes used for racing purposes. Its rowlocks are supported by brackets, rigged out, or projecting from the sides. See Boat; Canoe.

Outworker. One who works for an employer, elsewhere than in a factory or workshop. An equivalent term is home-worker. The evil of the system in the United Kingdom, as revealed by the inquiry, 1888-90, into conditions in the sweated trades, has resulted in the establishment of sanitary workshops, subject to government inspection, where much work is done that was formerly done in the living-rooms of poor homes. In recent years cottage industries, such as lacemaking, have been revived under conditions more favourable than

those prevailing in the poorer districts of large towns. See Sweating System; Trade Board.

Ouzel. Name for several birds of the thrush family (Turdidae). It is represented in Britain by the ring-ouzel (*Merula torquata*) and the water-ouzel (*Cinclus aquaticus*). The former is a large moorland blackbird, with a white crescent across its breast. It is a migrant, reaching England from Africa in April, and leaving again in autumn. Its nest, eggs, and habits are much like those of the common blackbird. The water-ouzel or dipper is a resident, and is more like a thrush with a short tail. See Dipper.

Ovaherero. Collective name of the Herero people. Living in the coastal plains of the South-West Africa Protectorate, their speech is a Bantu dialect. Formerly called Cattle Damaras, their name is sometimes improperly extended to the Hill Damaras, who have Hot-tentot characteristics and speech. See Hereros.

Oval, THE. Ground of the Surrey County Cricket Club. It is on the W. side of the Kennington Park Road, London, S.E., and covers about 9 acres of the site of the park of Sir Noel Caron, a Dutch ambassador to England in the 17th century. Opened as a cricket ground, April 16, 1846, it is held on a lease from the duchy of Cornwall. It was the centre of the old Surrey cycle race meetings. See Kennington.

Ovambo OR OVAMPO. Negroid people in the South-West Africa Protectorate. Numbering in 1913 60,000, in the fertile Ovamboland steppes N.E. of the Hereros, they are distinguished from this allied people by their scantier dress, more peaceable disposition, and agricultural pursuits. Their tribes occupy scattered groups of palisaded homesteads, with granaries and chicken-houses on pile supports. Their two Bantu dialects, Ndonga and Kwanyama, are spoken also in S. Angola.

Ovamboland OR AMBOLAND. Country of South-West Africa. Inhabited by the Ovambos, it is situated on both sides of the boundary between Portuguese West Africa and the South-West Africa Protectorate, mainly in the latter. The native population is estimated at 156,000, and the area is about 16,000 sq. m. The country is arid, and there are no running streams except the Cunene in the extreme N. Many natives own cattle. Before the British occupation in 1915 the only Europeans in the country were missionaries of the Finnish and Rhenish Missionary Societies,

the Germans in 1906 closing the country to travellers and settlers. See South-West Africa.

Ovar. Town of Portugal, in Beira prov. It stands near the N. end of the lagoon of Aveiro, 21 m. by rly. S. of Oporto, and 15 m. N. of Aveiro. It has fisheries, and trades in timber, onions, wine, cereals, and vegetables. Pop. 11,000.

Ovary. Gland in the female in which are maintained the ova or cells, which, after fertilisation by the spermatozoa, develop into new individuals. The ovaries are two in number, and are situated in the pelvis, one on each side of the uterus. Each gland is oval in shape, and about 1½ in. in length.

The ovary consists of fibrous tissue crowded with a number of rounded cells or oöcytes, and vesicles called Graafian follicles. The Graafian follicle enlarges and ultimately bursts, thus releasing a ripe ovum. This process is known as ovulation, and occurs about once every four weeks, being closely associated with menstruation, though the precise relationship is not fully known. The ovum, after being set free, enters the Fallopian tube, where fertilisation most frequently occurs, and then passes into the uterus, where further development takes place. Removal of the ovaries (ovariotomy) after puberty leads to cessation of menstruation, and possibly some degree of atrophy of the uterus and breasts. Ovaritis or oöphoritis is inflammation of the ovary.

In botany, the ovary is the base of the pistil, containing the carpel or carpels, in which are the ovules or rudimentary seeds. See Flower.

Ovation (Lat. *ovare*, to rejoice). In ancient Rome, a minor celebration of victory accorded to a successful general who was not considered worthy of a full triumph. See Triumph.

Oven. Chamber made of brick, stone, or iron, and heated either from without or within, in which articles may be baked. As part of a kitchen range for cooking food, the heat is external, the fire being to one side, and the other sides surrounded with flues through which the heat passes. Internal heating is used in a gas oven by means of rows of gas jets, also in a brick oven, in which a fire is burnt until the heat is sufficient, when the ashes are withdrawn, the food inserted, and the door closed. Ovens are used in making pottery, in metallurgy, and chemical operations. See Furnace.

Oven Bird. Popular name for the genus *Furnarius* of S. American birds, resembling tree-creepers,

of which there are some 20 species. The name is derived from the oven-like nest constructed by some of the species. In the U.S.A. the golden-crowned water-thrush, *Seiurus aurocapillus*, a kind of wood-warbler, is called oven bird for a similar reason.

Over. District of Cheshire, England, part of the urban dist. of Winsford. It stands on the Weaver, 4 m. from Middlewich, with a station, Winsford and Over, on the Cheshire Lines Rly. It is a centre of the salt industry, and has sheep and cattle fairs. S. Chad's is a 16th century church. Another Over is in Cambridgeshire.

Overalls. Name applied to garments put on over other clothes for their protection from dirt or wet. Familiar examples are the dungarees worn by engineers and the oilskins of seamen. The trousers worn by cavalymen of the British army are called overalls, having at one time been made loose enough to pull over the boots and furnished with leather bottoms to the legs. Later the overalls became an ornamental part of the uniform. See Army, British; Uniform.

Overbury, SIR THOMAS (1581-1613). English poet and essayist. Born at Compton Scorpion, War-



Sir T. Overbury,
English poet
After N. Whittock

wick, and educated at Oxford and the Middle Temple, his works include the poem *A Wife, Characters or Witty Descriptions of the Properties of Sundry Persons*, and *Crumbs Fal'n from King James's Table*, which were edited by E. F. Rimbault, 1856. He was an associate of Robert Carr (later earl of Somerset), for opposing whose marriage with the countess of Essex he was imprisoned and poisoned, Sept. 15, 1613. See Somerset, Earl of.

Overijssel. Prov. of the Netherlands. With an area of 1,295 sq. m., it adjoins the provs. of Friesland, Drenthe, and Gelderland, its W. frontier being that of Germany, its E. being the Zuyder Zee. It consists mostly of flat marshy country, with moors, fens, and woods. Sheep and cattle are reared and dairy produce is important. The Yssel, Vecht, and Regge are the chief rivers. Zwolle is the capital. Pop. 433,000.

Overland Route. Popular term for the quickest way between Great Britain and India. It runs overland through Paris, Lyons, the Mt. Cenis Tunnel, Modena, and

Brindisi; thence by steamer to Port Said, and through the Suez Canal and Red Sea to Bombay. The average time taken is 20 days.

Overload. In electrical engineering, the amount of load or work imposed on an engine or motor over and above that which it was designed to carry or to perform economically. The effect of an overload on an electric motor is to reduce speed, lessen the counter electromotive force, and, by permitting an undue quantity of current to pass through the coils of the armature, to overheat them and possibly destroy their insulation.

Overlying. Suffocation of an infant by pressure against the mother or other person while in bed. The infant mortality from this cause has greatly declined of late years. In 1913 the number of deaths of children under one year of age who were suffocated while in bed in England and Wales was 1,180; in 1919 the number was 467. While this decrease may be partly explained by more frequent recognition of disease as the cause of death, it is also partly attributable to greater care taken of children, especially in the direction of providing them with separate cots. See Children; Infant Mortality.

Overmantel. In modern usage, a piece of cabinet work. It often comprises a mirror with side shelves for ornaments, placed or fitted above a fireplace. It was a Victorian imitation of the Jacobean panelled mantelpiece. See Chimney-piece.

Overreach, SIR GILES. Character in Massinger's play, *A New Way to Pay Old Debts*, 1625-26. An upstart, envious of the caste from which his birth excludes him, he seeks to marry his daughter Margaret to a nobleman and so triumph over those whom he has ruined financially, but who still rebuff him. Overreached by his intended victims, he loses his reason. His prototype has been found in Sir Giles Mompesson (1584-1651).

Overseas Club and Patriotic League. Non-party society of British subjects residing in all parts of the world.



Overseas
Club
badge

Largely organized by Evelyn Wrench and an offspring of The Overseas Daily Mail, it was founded Aug. 27, 1910; amalgamated March 31, 1918, with the Patriotic League of Britons Overseas, a society founded in Aug., 1914; and associated in Aug., 1919, with the League of the Empire, which was started in 1901. Viscount Northcliffe was the first president. Its chief objects are to draw together

in a bond of comradeship and mutual help Britons all over the world. It has about 1,000 honorary corresponding secretaries. The London headquarters were at General Buildings, Aldwych, W.C., until 1922, when they were transferred to Vernon House, Park Place, St. James's. When in 1921 the membership had reached 26,000, a charter of incorporation was applied for.

Overseas Daily Mail. Weekly issue of The Daily Mail. It is issued every Friday for dispatch to the outlying parts of the British empire, and contains a summary of the news of the week. It was founded Nov. 26, 1904. See Daily Mail.

Overseas Daily Mirror. Weekly edition of The Daily Mirror. Founded March 9, 1913, it is published every Thursday for dispatch overseas. See Daily Mirror.

Oversea Settlement Office. Department of the British Colonial office. It was established in Jan., 1919, and constituted in accordance with the recommendations made by the Dominions Royal Commission and the Empire Settlement Committee. Its function is to superintend the emigration of British subjects to the dominions and foreign countries, thus superseding the Emigrants' Information Office established in 1886. Address 59, Victoria Street, London, S.W. See Emigration.

Overseas Trade, DEPARTMENT OF. In the United Kingdom, a joint sub-department of the Foreign Office and Board of Trade. It is represented in Parliament by a parliamentary secretary, who occupies the dual position of additional under-secretary for foreign affairs and additional parliamentary secretary to the Board of Trade. The office is at 35, Old Queen Street, London, S.W., and there is a branch at 73, Basinghall Street, E.C., while there is a foreign samples showroom and foreign catalogues library at 7-11, Old Bailey. See Foreign Office; Trade, Board of.

Overseer. Generally, one who oversees or inspects. The term is specifically applied to the unpaid officials appointed each year in every parish in England and Wales to make provision for the poor of the parish. The office was instituted in 1601. Overseers are appointed from a list of householders resident in the parish. Their duties include the making and levying of poor-rates upon the inhabitants of the parish, and the preparation of valuation, voters', and jury lists. Assistant overseers are paid officials employed to relieve the overseers. See Guardian; Poor Laws.

Oversoul. Term used by R. W. Emerson to express the idea of God as the supreme spirit which animates the universe. He compares the oversoul to the atmosphere which embraces the earth in its bosom; it is the absolute unity, in which each man's particular being is contained and made one with all others.

Overstone, SAMUEL JONES LOYD, 1ST BARON (1796-1883). British banker. Born in London, Sept. 25, 1796, he was educated at Eton and Trinity College, Cambridge. He entered the business of Jones, Loyd and Co., and became a leading authority on banking.



He was Whig M.P. for Hythe 1819-26, and in 1850 he was made a peer. He died Nov. 17, 1883, leaving his great wealth to an only daughter, afterwards the wife of Lord Wantage.

Overture. Musical composition for instruments, intended originally as an introduction or opening of an opera, suite, oratorio, or play.

Handel modelled his overtures on Lully's, Bach based his concertos on the Scarlatti overture. Later, with the growth of sonata form, the overture developed on similar lines, and many of the opera overtures of Mozart, Beethoven, Weber, and the early Wagner are symphonic or sonata movements, some of them foreshadowing the works which they preceded either by employing the same themes, or merely by inducing an atmosphere. Concert overtures are works built on similar lines, but independent of any opera or play, such as Mendelssohn's characteristic *Melusine*, *Fingal's Cave*, *A Calm Sea*, etc.; Schumann's *Bride of Messina* and *Manfred*; and Sterndale Bennett's *Naiads*, *Paradise* and the *Peri*, etc. See Music.

Ovid (43 B.C.-A.D. 17). Roman poet, whose full name was Publius Ovidius Naso. He was born March 20, 43 B.C., at Sulmo (mod. Salsomano), in the country of the Paeligni, his father being a well-to-do member of the equestrian order. Being intended for the legal pro-



Ovid,
Roman poet
From a print in the
British Museum

fession, his father took him to Rome, where he studied under the most famous rhetoricians of the day. He showed great promise as a lawyer, and held some minor official positions, but he felt that poetry was his profession. At the age of 27 he wrote the tragedy of *Medea*, unfortunately lost, of which Quintilian speaks in the highest terms. With an increasing reputation and enjoying the favour of Augustus, in A.D. 9 he was suddenly "relegated" (see *Exile*) to Tomi, now Constanta, on the Euxine. The reason has never been explained. He himself attributes it to one of his poems (probably *The Art of Love*) and to an indiscretion. Unable to obtain remission of his sentence, he died at Tomi.

His extant poems, all except the *Metamorphoses* written in hexameters, may be divided into three classes:

(1) *Erotic*. These include *Heroides*, a collection of fictitious love-letters, written by the heroines of legend to their lovers or husbands; *Amores*, the varied experiences of a lover, written round an entirely imaginary Corinna; *Medicamina faciei*, *Cosmetics* or the *Art of Making-up*, an account of various toilet devices; *Ars Amatoria*, the *Art of Love*, with instructions for gaining and retaining the affections of a lover or mistress; *Remedia Amoris*, *Remedies for Love*, apparently a kind of recantation of the *Art*.

(2) *Mythological*. These are: *Metamorphoses*, his most famous work, an account of all the myths involving changes of form from the beginning of the world to the transformation of Caesar into a star; *Fasti*, a poetical calendar, giving an account of the heavenly phenomena, the Roman festivals, and their origin; originally intended to be in 12 books, corresponding to the number of months in the year, it was interrupted by Ovid's banishment, only six books, published after his death, being completed.

(3) *Poems of Exile*; *Tristia*, *Lamentations*, and *Epistulae ex Ponto*, *Letters from Pontus*, in which he bewails his lot, and endeavours, by somewhat undignified appeals, to induce the emperor to allow him to return.

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Oviedo. Prov. of Spain. It corresponds with the ancient *Asturias* and occupies the N. slopes of the

Central Cantabrian Mts. as far as the Bay of Biscay. The Narcea, Nalon, and Navia drain the slopes and provide water-power for the local industries, textiles and glass-making. In the Nalon valley is the best coalfield in Spain. The mountainous S. impedes communications, the road and rly. to Madrid traverse the Pajares Pass, the other rly. skirts the coast and connects the ports of Gijón and Aviles with Santander. Sugar-beets are a valuable crop. Its area is 4,205 sq. m. Pop. 720,000.

Oviedo. City of Spain, capital of the prov. of the same name. Situated on the edge of a fertile



Oviedo, Spain. Church of S. Miguel de Lino, now a national monument

plain where sugar-beet is extensively cultivated, it has national ordnance factories and manufactures of textiles, leather goods, chocolate, and matches. The cathedral, rebuilt 1388-1528, is one of the finest in Spain. The church of S. Miguel de Lino or Lillo, built by Ramiro I, 1035-63, is a cruciform building and noteworthy for its carving. The town has been greatly modernised with fine wide streets. Pop. 56,000.

Ovillers. Village of France, in the dept. of Somme. It is 3 m. N.E. of Albert, and is known as Ovillers La Boisselle. Reached by the British, July 1, 1916, its possession was fiercely contested, but July 3-16 the British completed its capture. Its ruins were regained by the Germans in March, 1918, and were retaken by the British in the autumn. It has been adopted by Gloucester, as various Gloucester battalions took a prominent part in the fighting here. See *Somme*, *Battles of the*.

Oviparous (Lat. *ovum*, egg; *parere*, to produce). Term applied to those animals that deposit their eggs so that embryonic development takes place outside the body of the mother. It is obsolescent.

OWARI OR BISHIU. Prov. of Japan, in Honshu. It is bounded S. by Ise Bay on the E. coast. It consists almost entirely of a fertile plain, the chief area in Japan for the production of rice, wheat, and barley. Horseradish is dried and exported in large quantities. Poultry rearing is an important occupation. The local clay gave rise to the ceramic industry, which began at Seto village in 1297. Nagoya is the chief town.

Owen, JOHN (1616-83). English Puritan. He was born at Stadhampton, Oxfordshire, was educated at Oxford, and became minister of Fordham and Coggeshall. He became an Independent, and went as chaplain with Cromwell to Ireland in 1649. Two



John Owen,
English Puritan
After Riley

years later he was appointed dean of Christ Church, Oxford, and in 1652 vice-chancellor of the university. At the Restoration he was expelled from office; but Charles II allowed him to minister to an Independent congregation in Leadenhall Street, London. He died Aug. 24, 1683.

Owen, SIR RICHARD (1804-92). British scientist. Born at Lancaster, July 20, 1804, and educated at Edinburgh, he entered the museum of the Royal College of Surgeons, London, 1826. Ultimately he became its curator, a post he held until 1856, when he was appointed



Sir Richard Owen,
British scientist

superintendent of the natural history department of the British Museum. In 1836 he had been selected for the first Hunterian professorship of comparative anatomy. He is regarded as the greatest anatomist in the history of the science. He was made a K.C.B. 1884, and died Dec. 18, 1892. *See* Life, R. Owen, 1894.

Owen, ROBERT (1771-1858). British social reformer. Born at Newtown, Montgomeryshire, May 14, 1771, at 19 he was managing a cotton mill with 500 hands. In 1800 he became manager of and partner in the New Lanark Mills, and put into practice on a large scale the ideas which he had already imported into the management of workpeople. His main

principle was that the best work can only be expected from happy, prosperous, and educated employees.



Robert Owen,
Social reformer

With the aid of Jeremy Bentham, he converted his business into a philanthropic trust for his work people, the capital being allowed a fixed remuneration of five p.c. The colonies established by Owen—at Orbiston, in Lanarkshire, and at New Harmony, Indiana, U.S.A.—were unsuccessful and involved him in heavy financial losses. By 1828 he had completely severed his connexion with New Lanark, and devoted the rest of his life to the exposition of his socialistic theories. He died Nov. 17, 1858. His works include *A New View of Society*, *A New Moral World*, and an *Autobiography*. *See* Co-Partnership; Socialism; consult also Lives, L. Jones, 1890; F. Podmore, 1906.

Owens, JOHN (1790-1846). British merchant. He was born in Manchester, where he amassed a

large fortune, the residue of which, amounting to £96,000, he left in trust for the foundation of a college, with the proviso that no theological tests should be required. Owens College was accordingly founded and opened in 1851. *See* Manchester University.

Owensboro. City of Kentucky, U.S.A., the co. seat of Daviess co. It stands on the Ohio river, 115 m. by rly. S.W. of Louisville, and is served by the Louisville and Nashville and other rlys. A considerable river trade is carried on, chiefly in tobacco. Other industries are the manufacture of carriages and wagons, flour, lumber products, etc. Oil is obtained in the neighbourhood, and cattle-rearing is an important local industry. Owensboro was settled in 1797 and chartered as a city in 1866. Pop. 17,400.

Owen Sound. Town and port of Ontario, Canada. On Owen Sound where the Sydenham river falls into Georgian Bay, and 120 m. from Toronto, it is served by the G.T.R. and C.P.R., and is a port for steamers to the Great Lakes and St. Lawrence. Pop. 12,600.

Owl. Order of nocturnal birds of prey (*Strigiformes*). They are externally distinguished by their large heads and the radiated ruffs of feathers around the large eyes. Owing to their loose, outstanding plumage, most owls look much larger than they really are. They are noted for their silent flight and their keenness of vision at night. They feed mainly on small rodents. Six British species are known.

The barn owl (*Strix flammea*) is the best known in Britain and is common nearly everywhere except in the towns. Its plumage is tawny yellow above, with white face and under parts. In its nocturnal hunting it never wanders far from its abode, often a church tower or hollow tree. It utters a strident and discordant scream, from which it is sometimes known as the screech-owl. The long-eared owl (*Asio otus*) is about the same size, but darker, with erect tufts of feathers above the eyes. It is gregarious, lives in dense pine woods, varies its diet of small birds with insects, and generally breeds in the deserted nest of a crow or magpie.

The short-eared owl (*Asio accipitrinus*) is yellowish brown, with a buff face and short tufts of dark feathers on the head. It has a smaller head and is less owl-like in appearance than the other species. A migratory bird, it visits Great Britain chiefly in winter, breeding in the N. of England and in Scotland, where it nests on the ground on moors. It is not strictly nocturnal, and feeds upon rodents and small birds.

The tawny owl (*Strix stridula*), often called the brown or wood owl, is larger in size, with reddish brown plumage above, and reddish white barred with brown below, and is not uncommon in most wooded districts of England and Scotland, but is not native in Ireland. This is the species that utters the well-known hooting cry. It makes its home in hollow trees. The snowy owl, the European hawk-owl, the American hawk-owl, etc., are only occasional visitors to Great Britain. *See* Eggs, colour plate; Feather.

Owyhee. River of Oregon, U.S.A. Its headstreams rise in Nevada and Idaho, and after their junction the river flows generally N. to the river Snake. Its length is 370 m.

Ox. Word of Anglo-Saxon origin, used for the male of the different species of the Bovidae. Oxen is one of the few existing forms of the old plural *en*. From the Middle Ages the ox has been extensively used for ploughing and hauling. *See* Bovidae; Cattle.



John Owens,
British merchant
From a medallion by
G. F. Woolner, R.A.

Oxalic Acid ($\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$). A solid organic acid first prepared from wood sorrel (*Oxalis acetosella*), in which plant it occurs as the acid potassium oxalate. The acid is made on the commercial scale by Dale's process, which consists in fusing sawdust from soft woods, with a mixture of caustic potash and soda. The acid is largely used in calico printing and dyeing, and in the preparation of formic acid and synthetic dyes. Oxalic acid is also used in bleaching



congress of Nijmegen; and Gabriel Thuresson (1641-1707), ambassador at the congress of Ryewiek, but who lost influence owing to his conversion to Catholicism. John Gabriel (1750-1818) was a poet and scholar.

Oxenstierna or **OXENSTJERNA**, AXEL GUSTAFSSON, COUNT (1583-1654). Swedish statesman. Born at Fanö, June 16, 1583, he studied theology in Germany, served Charles IX in diplomatic missions, and became chancellor under Gustavus Adolphus, 1611. He accompanied the king on the Russian campaigns, negotiated the treaty of Stolbova, 1617, and was governor-general of Prussia during the Swedish occupation. He opposed Swedish participation in the Thirty Years' War, but ably supported his king in Germany, acted as regent after his death, 1632, and became



Owl. Species of the nocturnal bird of prey. 1. Group of long-eared owls. 2. Short-eared. 3. Barn Owl. 4. Tawny Owl

W. S. Herridge, F.Z.S.

straw and flax, and cleansing brass and other metals.

Ox-Bow. Name of a certain kind of lake. In their plain courses, rivers meander to such an



Ox-Bow. Diagram illustrating how a meandering river (1) may increase its meander (2); cut through the loop as in 3, and eventually flow straight, forming an ox-bow lake (4)

extent that great loops are formed. Eventually the river cuts through the neck of the loop and straightens itself, leaving a horseshoe-shaped backwater, which becomes a cut-off or ox-bow lake when the deposition of silt blocks up the ends. There are large numbers of ox-bow lakes, some reaching 5 m. in diameter, in the lower valleys of such rivers as the Mississippi. See Lake.

Oxenham, JOHN. Name adopted for literary purposes by W. A. Dunkerley, British novelist. Educated at Old Trafford School and Victoria University, Manchester, he engaged in business in France and the U.S.A. In England he turned his attention to journalism and was associated with *The Idler* and *To-day*, under the editorship of Jerome K. Jerome, before becoming known as a prolific writer of bright, popular novels and verse. Among the former may be mentioned *God's Prisoner*, 1898; *John of Gerisau*, 1902; *Barbe of Grand Bayou*, 1903; *Great-Heart Gillian*, 1909; and *Broken Shackles*, 1914. His books of verse include *Bees in Amber*, 1913; *All Clear!*, 1919; and *Gentlemen—The King!*, 1920.

Oxenstierna or **OXENSTJERNA** Name of Swedish family, frequently referred to as *Oxenstiern*. The most distinguished member was Axel, but others were Bengt Gabrielsson (1623-1702), who defended Thorn against the Poles, was chancellor under Charles XI, and represented Sweden at the

a pivot of the Protestant alliance throughout the struggle. He negotiated the Danish treaty in 1645, and opposed the abdication of Christina of Sweden. He died on Aug. 28, 1654. See Sweden: History; Thirty Years' War.

Ox-eye Daisy (*Chrysanthemum leucanthemum*). Dog-daisy, perennial herb of the natural order Compositae. A native of Europe and N. and W. Asia, it has spoon-shaped, deeply cut leaves, and daisy-like flower-heads, 2 ins. across. The rays are pure white, the disk-florets yellow. It is a common weed of meadows and pastures in Britain.



Ox-eye Daisy or Dog Daisy. Flowers of the common British weed

Oxford. City and co. town of Oxfordshire, England. It is on the Thames, here called the Isis, which sweeps round the W. and S. of the city, and is here joined by the Cherwell. It is 63 m. by rly. from London, and is on the G.W. and L. & N.W. rlys. At



Oxford arms

Carfax, the centre of the old city, four streets meet: the High Street, one of the most picturesque thoroughfares in Europe, the Cornmarket, Queen Street, and St. Aldate's. Across Magdalen Bridge, at the other end of the High Street, are modern suburbs. In N. Oxford, where is the suburb of Summertown, are numerous villas, for the city attracts many leisured persons. The chief industry is catering for the wants of the members of the university; there are also breweries, printing works, and other manufactories, and an important market for cattle.

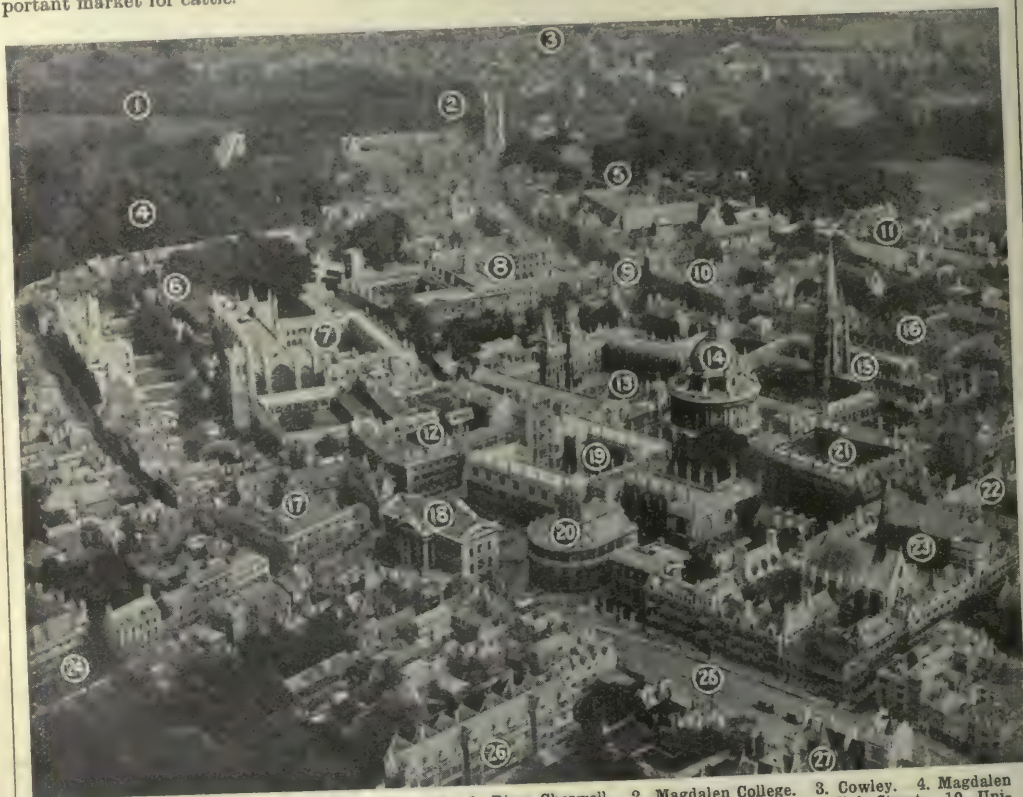
The partly Norman cathedral, formerly the priory church of S. Frideswide, is included in Wolsey's foundation of Christ Church. Other interesting churches are the university church of S. Mary the Virgin, S. Peter in the East, S. Giles, S. Barnabas, S. Aldate, and S. Michael. All Saints is the city church. Apart from the colleges, museums, libraries, and other buildings that belong to the university, the chief edifices are the municipal buildings, the castle, and the high school for boys. There are extensive remains of the town walls. Oxford now contains many colleges that are not really part of the university, and a number of schools of various kinds.

Although Oxford owes its prosperity almost wholly to its university, it was an important place before that was founded. It was certainly so under the later Anglo-Saxon kings, and its position on the Thames was such that the Normans fortified it strongly. It received a charter of incorporation about 1100. Maud was besieged

here by Stephen in 1142, and the Provisions of Oxford were drawn up by the Mad Parliament in 1258. Charles I, when driven from London, made Oxford his headquarters. The bishopric was founded at the Reformation.

The city is governed by an elected council, but three of the aldermen and nine of the councillors represent the university. This divided authority, which originated about the 14th century, has not always worked as amicably as it does to-day. The city sends one member to Parliament; from 1295 to 1885 it sent two. The municipal waterworks date from 1615. Pop. (1921) 57,052.

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Oxford. Air view of the city from the north-west. 1. River Cherwell. 2. Magdalen College. 3. Cowley. 4. Magdalen Deer Park. 5. Examination Schools. 6. City walls. 7. New College. 8. Queen's College. 9. High Street. 10. University College. 11. Merton College. 12. Hertford College. 13. All Souls College. 14. Radcliffe Camera. 15. University Church. 16. Oriel College. 17. Indian Institute. 18. Old Clarendon Building. 19. Bodleian Library. 20. Sheldonian Theatre. 21. Brasenose College. 22. Lincoln College. 23. Exeter College. 24. Wadham College. 25. Broad Street. 26. Trinity College. 27. Balliol College.

By courtesy of Aerofilms, Ltd., London



Oxford. Plan of the university city showing position of the colleges and churches

Oxford, UNIVERSITY OF. English university. The date of its foundation is unknown, and its early history is mixed up with that of the monastic schools that were here before the Norman Conquest. As a university it dates from about 1100, and the oldest college was founded in the 13th century, when money was first left for university purposes.



Oxford University arms

The university was soon famed and flourishing. Students from England and abroad thronged the lectures; the earliest of the existing buildings were begun and the members of the university became a body under a chancellor, protected by privileges from the king. Colleges and halls were rapidly founded. They were religious foundations, and some of them developed from houses established in Oxford by religious orders.

In 1571 the university was reorganized and in 1636 its statutes were revised. The constitution was revised in 1854 and extensive changes made in 1877, on both occasions after an inquiry by a royal commission. A further royal commission inquired into the conditions and resources of the university in 1920-21. The reforms of 1877 included the making of new statutes for most of the colleges, the abolition of sinecure positions, and in general bringing the university more into touch with modern conditions. In 1871, by the abolition of religious tests, the university was opened to Nonconformists, and in 1920 women were admitted to its membership.

Apart from the colleges, of which there are 21 and one hall, the university owns a good deal of property. Its buildings and institutions in Oxford include the Bodleian Library, University Galleries, Sheldonian Theatre, Indian Institute, observatories, several museums, and the buildings erected for examination and other purposes. It owns the parks and has a botanic garden. The head of the university is the chancellor, a nobleman of distinction, and its acting head the vice-chancellor, the head of one of the colleges, who usually serves for four years.

Discipline is in the hands of two proctors elected annually by the colleges in turn. There are a large number of professors and lecturers, or readers, appointed by the university, except the regius professors, who are appointed by the crown. The governing bodies are the Hebdomadal council, a small body elected for six years; Congregation, which consists of resident members of the university; and Convocation, of which all masters of arts and doctors are members, the legislative body of the university. Degrees are given in arts, divinity, law, medicine, music, and other subjects. There are pass courses and, for more ambitious students, honour schools in classical learning, modern history, law, etc. The university awards a number of scholarships and prizes. Two members have been returned to Parliament since 1604. See University, and the articles on the separate colleges.

Bibliography. History of the University of Oxford, G. G. Brodrick, 1886; History of the University of Oxford, H. C. Maxwell-Lyte, 1886; Oxford, C. W. Boase, 1887; Oxford, A. Lang, new ed. 1890;

Oxford and Oxford Life, J. Wells, 1892; Oxford and Her Colleges, G. Smith, 1894.

Oxford UNIVERSITY PRESS. The oldest institution of its kind in the world. The first Oxford book, a Latin commentary by Rufinus of Aquileia on the Apostles' Creed, is dated 1468 (? 1478). The Press has been continuous since 1585, and the Bible section since 1675. Printing was carried on in the Sheldonian Theatre from 1669 to 1713, and the Clarendon Building in Broad Street until 1830, when the Press removed to the extensive premises in Walton Street. The type foundry is the oldest in England, and its types are adaptable to nearly all languages. The Press does its own electrotyping, stereotyping, and bookbinding; has its own lithographic and colotype plants, and makes its own paper, including the famous India paper, and ink.

The associated name of the Clarendon Press dates from 1713, when, from the profits of Clarendon's History of the Rebellion, new offices were erected. The London publishing house is at Amen House, Warwick Square, London; the paper mill at Wolvercote, near Oxford. There are branches in Edinburgh, Glasgow, Melbourne, Cape Town, New York, Toronto, Bombay, Madras, and Shanghai. On the retirement of Henry Frowde, 1913, Humphrey Milford became the publisher; and as printer Horace Hart was succeeded on his decease in 1916 by Frederick Hall. In 1917 the stock and copyright of The Dictionary of National Biography were transferred by the family of the late George M. Smith to this Press.

Oxford, EARL OF. English title held successively by the families of Vere and Harley. The great Norman family of Vere was represented in the time of William the Conqueror by Aubrey de Vere, the holder of extensive lands. In 1133 his descendant was made lord great chamberlain, and the earls of Oxford held that office until 1625. In 1142 another descendant was made earl of Oxford. Nearly all the earls, whose chief seat was Castle Hedingham, in Essex, were persons of note.

Robert, the 9th earl (1362-92), was made duke of Ireland. A close friend of Richard II, he lost his honours, but the title was restored to his descendants, one of whom, John, the 12th earl, was executed as a Lancastrian in 1462. His son, John, the 13th earl (1443-1513), was also a prominent Lancastrian. Edward, the 17th earl (1550-1604), was a typical Elizabethan, a gallant

and writer of verse, also a spend-thrift. Henry, the 18th earl, died in 1625, when the great chamberlainship passed from the Veres. Aubrey, the 20th earl, died in 1703, and the title became extinct.

In 1711 the statesman Robert Harley was made earl of Oxford. He was succeeded by his son Edward (1689-1741), who had no sons. The 3rd earl was therefore a cousin, Edward (d. 1755), in whose line the title remained until the death of Alfred, the 6th earl, in 1853, when it became extinct. *See Vere.*

Oxford, ROBERT HARLEY, 1ST EARL OF (1661-1724). English statesman. Born in London,



1st Earl of Oxford,
English statesman
After Kneller

Dec. 5, 1661, he entered Parliament in 1689 as a staunch Whig. Coming soon to the fore, he carried through the Triennial Bill, 1694. He was speaker 1701-5, and in

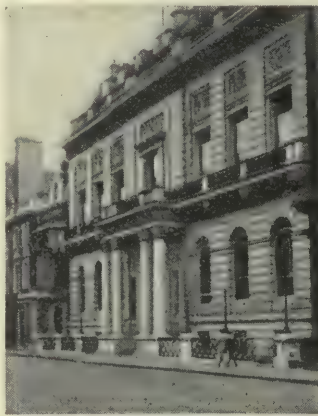
1706 was appointed a commissioner for the union with Scotland, and later in the year secretary of state for the southern department. By this time he had obtained influence over Queen Anne.

Assisted by his cousin, Abigail Hill, afterwards Lady Masham (*q.v.*), he destroyed the Marlborough interest, and in 1710 became chancellor of the exchequer and virtual prime minister. Despite the jealousy of the high Tory ministers and the bitter opposition of Marlborough and Godolphin, secret negotiations with France were begun in 1711, and the peace itself was signed two years later. Early in 1711 Harley had been created earl of Oxford and made lord high treasurer.

In 1714 Bolingbroke, disappointed by Harley's refusal to further his schemes for a restoration, began to plot against him, and persuaded Anne, a month before she died, to dismiss her minister. The next year Harley was impeached for concluding the French treaty, and was committed to the Tower, where he remained until 1717, when the impeachment fell through, though he was omitted from the Act of Grace. Harley died in London, May 21, 1724. A man of wide literary tastes, in 1705 he began the collection of books and MSS. which is famous as the Harleian MSS. (*q.v.*). *See Life, E. S. Roscoe, 1902.*

Oxford and Asquith, 1ST EARL OF. Title assumed in 1925 by H. H. Asquith (*q.v.*).

Oxford and Cambridge Club. London social club. Founded in 1830, Lord Palmerston being among



Oxford and Cambridge Club, London.
The club house in Pall Mall

its originators, its first house was in St. James's Square, where it remained until a fine building was erected for it at 71, Pall Mall. The exterior is decorated with notable bas-reliefs, and, within, the library is a feature. Membership is restricted to those connected with the two universities.

Oxford Canal. English canal, connecting the Upper Thames with the Midlands. The upper Cherwell has been canalised to allow barges drawing 3 ft. 8 ins. to reach Oxford from the S. Staffs. coalfield; grain is collected at Banbury and transported to the Oxford flour-mills by the canal, which was opened in 1790.

Oxford House. Anglican settlement in East London. Founded in 1884 for members of Oxford University, the house itself is in Mape Street, Bethnal Green, E., but its activities are spread over a number of buildings in the locality. An Anglican foundation, numbering Dr. Winnington-Ingram among its heads, its clubs, etc., are undenominational. Its work is carried on by about 20 residents, and about the same number of non-resident workers. Young university men who are about to take holy orders spend a year here before passing on to one of the theological colleges. In connexion is a woman's settlement called S. Margaret's House. *See University Settlement.*

Oxfordian Beds. In geology, name given to the lowest subdivision of the Upper Jurassic rocks. They are typical in Oxfordshire, England, and are found in most districts from Dorsetshire to Yorkshire. *See Jurassic.*

Oxford Movement. Name given to the movement for reforming the life and worship of the

Church of England that began at Oxford in 1833. At that time the Church in general was in the state of lethargy into which it fell during the 18th century, and a number of Oxford men conceived the idea of making it more vigorous and powerful by increasing the number of services, reminding the clergy of their varied duties, and rendering it more than a mere adjunct of the state. An essential feature was the restoration of some of the ceremonial of worship that had fallen into disuse since the Reformation, and it was here that strong opposition was aroused. It was also called the Tractarian Movement because its aims were set forth in Tracts for the Times, a volume by various writers first published in 1834, while the adherents of the movement were called High Churchmen or, by their foes, Ritualists. *See Church of England; Kettle; Newman; Pusey; consult also The Oxford Movement, R. W. Church, 1891; Secret History of the Oxford Movement, W. Walsh, 5th ed. 1899; Five Oxford Leaders, A. B. Donaldson, 1900.*

Oxfordshire. South Midland county of England, known sometimes as Oxon. Its area is 748 sq. m.



Oxfordshire. Seal
of the county
council

Of very irregular shape, it is bounded on the S. by the Thames. In the S.E. are the Chiltern Hills, reaching up to 700 ft., and near Oxford are some lesser heights. Spurs of the Cotswolds enter the county, but the rest of it is undulating or flat. The chief rivers, tributaries of the Thames, are the Windrush, Cherwell, Thame, and Evenlode.

Oxfordshire is an agricultural county, producing barley, wheat, oats, and various vegetables, while cattle, sheep, and pigs are reared. Paper is made in several villages. It is served by the G.W., L. & N.W., and G.C. Rlys. and the Oxford Canal. Oxford is the county town; other places are Banbury, Henley-on-Thames, Chipping Norton, Bicester, Thame, and Witney. Herein are historic and picturesque places such as Woodstock, Burford, Bampton, and Dorchester, once the centre of a great bishopric, Blenheim, Great Tew, Nuneham, and Goring. Broughton and Shirburn castles are two great houses.

Of religious houses there are remains at Dorchester, Godstow, and elsewhere. There are beautiful churches at Bloxham, Langford,



Oxfordshire. Map of the South Midland county of England, famous for its picturesque and historical associations

Ifley, and Adderbury. Herein, too, are the remains of Wychwood Forest. The county sends two members to Parliament. Before the Norman Conquest Oxfordshire was part of Mercia. Later it was ravaged by the Danes and was made into a county. Many historic events took place at Oxford, and during the Civil War there was a good deal of fighting in the shire. Pop. (1921) 189,600.

LITERARY ASSOCIATIONS. Among the writers who were born in the county may be mentioned Sir Henry Maine, at Caversham Grove; George Rawlinson, at Chadlington; Maria Edgeworth, at Black Bourton; and Charles Reade, at Ipsden. Of Isip, Robert South (1634-1716) and William Buckland, the geologist, were rectors. At South Leigh, John Wesley preached his first sermon, 1725.

Woodstock gives its name as title to one of Sir Walter Scott's novels, much of the action of which takes place in the county. At Woodstock,

too, centre the many stories of Fair Rosamond, who is buried at Godstow. At Henley-on-Thames, William Shenstone is supposed to have written his famous lines on an inn. At Stanton Harcourt, Alexander Pope stayed. Bablock-Hythe and other places around Oxford are associated with Matthew Arnold's The Scholar Gipsy. Kelmscott, on the Thames side near the Gloucester border, was the home of William Morris, and there he is buried.

Bibliography. History of Oxfordshire, J. M. Falkner, 1899; Highways and Byways in Oxford and the Cotswolds, H. A. Evans, 1905; Victoria History of the Counties of England, Oxford, 2 vols., ed. W. Page, 1907; Oxfordshire, F. G. Brabant, 3rd ed. 1919.

Oxfordshire and Buckinghamshire Light Infantry. Regiment of the British army. It was originally the 43rd and 52nd Foot, raised in 1741 and 1755 respectively, the two being united as the Oxfordshire Light Infantry in 1881. The 43rd served under Wolfe at

the capture of Quebec in 1759 and in the West Indies, while both it and the 52nd fought in the American War of Independence. The 52nd served for many years in India, fighting in Mysore and elsewhere, before going to Spain in 1800. About 1801 the



Oxford & Bucks Light Infantry badge two, together with the 95th, were placed under Sir John Moore, were called light infantry, and became the famous light division. Their deeds in the Peninsular War are immortalised in Napier's History. At Waterloo the 52nd repulsed the Old Guard. The regiment was engaged in the Kaffir War, 1851-53, and a detachment was on the Birkenhead when she was wrecked in 1852. It won honour during the Indian Mutiny, served in New Zealand, 1864-66, in the Tirah Valley, 1897, and in the South African War.

In the Great War the regiment had, in addition to its regular battalions, territorial and service battalions, and several allied units from New Zealand and Canada. The 2nd battalion was part of the expeditionary force, and distinguished itself at Mons and the later battles of 1914, and in the fighting around Ypres in 1915. The 1st battalion was in Gallipoli, 1915, and in Mesopotamia, 1916. The territorials fought at Havrincourt and Bellicourt in 1917, and the service battalions were conspicuous in the third battle of Ypres and the first battle of Cambrai, and one battalion fought in Italy. Men of the regiment participated in the final British victories of 1918. The regimental depot is at Oxford.

Oxford Street. London thoroughfare. It runs W. from New Oxford Street, a link with Holborn, to join the Bayswater Road at the Marble Arch, W. Where it crosses Regent Street is Oxford Circus. New Oxford Street, opened in 1847, covers the site of the "rookery" of S. Giles. Oxford Street, named after Edward Harley, earl of Oxford, early in the 18th century, was formerly known as Tyburn Road, being part of the route from the Old Bailey to the gibbet at Tyburn (q.v.). The street, a great shopping centre, contains the New Oxford Theatre, once the Oxford Music Hall. The Princess's Theatre (q.v.) was at No. 152, on the N. side. In Oxford Street, called by him a "stony-hearted stepmother," De Quincey met the Ann of his Confessions.

Oxidation. Term in chemistry. It is applied in the strict sense to changes which result in the formation of new compounds with oxygen. The term oxidation has, however, been extended to kindred changes, such as new unions with chlorine or with some other element. The element or compound which brings about the changes is called an oxidiser or oxidising agent. See Oxygen.

Oxide Ores. Ores from which the bulk of the world's metals is obtained, and in which the metals occur combined with some other element or elements, forming a mineral not necessarily suggesting any metallic character. The more important of these oxide ores are those of iron, the haematites; magnetic or black iron ore; magnetite; siderite; chalybite or spathic iron ore, from which a large proportion of all the iron of the world is obtained; cuprite or copper ruby ore, carrying 88.8 p.c. of the metal; zincite or red zinc ore; and cassiterite or tinstone, which is practically the only ore of tin from which the metal is extracted. See Metallurgy; Ores.

Oxides. In chemistry, compounds which oxygen forms with other elements. Fluorine is the only well-known element with which oxygen does not combine, but in some cases oxygen combines with the same element in different proportions.

Oxides are classified thus: (1) Acid-forming oxides, those which when combined with water form acids; this class is also known as acid anhydrides, i.e. acids without water. Nitrogen pentoxide (N_2O_5) with water yields nitric acid (HNO_3). (2) Basic oxides, produced when metals burn in air or oxygen. When combined with water basic oxides form hydroxides or hydrated oxides. An example is potassium oxide (K_2O), which with water produces potassium hydrate (KOH). (3) Peroxides which contain more oxygen than basic oxides; part of the oxygen is loosely combined, and is given off on heating. Barium peroxide (BaO_2) and manganese dioxide (MnO_2) are examples. (4) Neutral or indifferent oxides, such as water (H_2O), carbon monoxide (CO), nitrous oxide (N_2O), and lead suboxide (Pb_2O). See Oxygen.

Oxlip (*Primula elatior*). Perennial herb of the natural order Primulaceae. It is a native of Europe and Siberia. In Britain it is restricted to the counties of Bedford, Cambridge, Suffolk, and Essex. Its flowers are similar in size and colour to those of the primrose, with short individual



Oxlip. Leaves and flower-spray; inset, roots

stalks springing from the top of a stout, tall stem like that of the cowslip. What is commonly known as the oxlip in gardens is a hybrid between the primrose and cowslip.

Ox-Pecker or RHINOCEROS BIRD (*Buphaga*). Bird found in Africa. They are dull brown above and light brown beneath, and about the size of a starling. Insectivorous, they get their name from the habit of settling on the backs of the ox and rhinoceros to search for parasitic insects.

Oxus. Ancient name of the river now called the Amu Daria (q.v.).

Oxychlorides. Metallic chlorides which also contain oxygen. They are formed when certain metallic chlorides are added to water, e.g. when bismuth chloride (BiCl_3) or antimony chloride (SbCl_3) are added to water the oxychlorides, BiOCl and SbOCl , are

produced. Zinc chloride also forms an oxychloride on keeping, or on evaporating a solution of the salt. Some chlorides such as ferric chloride (FeCl_3), cupric chloride (CuCl_2), and bismuth chloride (BiCl_3) yield oxychlorides when heated in dry air.

Oxygen. Most widely distributed of the chemical elements, chemical symbol O, atomic weight 16. It is a colourless, odourless, and tasteless gas, and exists in the free state in the atmosphere, of which it forms about 21 p.c. by volume. Oxygen also occurs in enormous quantities in the combined state, as eight-ninths, by weight, of water consists of oxygen, and oxides form a large part of the earth's crust. It is essential to life.

Oxygen was discovered in 1774 by Priestley, who called it "dephlogisticated air," and simultaneously by Scheele (1742-86), a Swedish apothecary, who named it "empyrean" or "fire-air." Lavoisier, regarding it as the essential constituent of acids, gave it the name oxygène (acid-former).

The gas was first liquefied in 1877 by Cailletet and Pictet, and in liquid form is pale blue. The characteristic of oxygen is its power of supporting combustion.

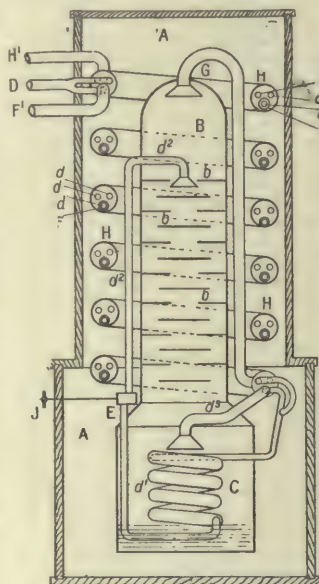
The methods of preparing oxygen are as follows:

(1) By heating mercuric oxide (HgO) or red oxide of mercury in a glass retort, Priestley's method.

(2) By strongly heating manganese dioxide (MnO_2) in an iron retort. One-third of its oxygen is given off, a lower manganese oxide (Mn_2O_3) being formed. Other oxides as lead dioxide (PbO_2), barium dioxide (BaO_2), and chromium trioxide (CrO_3), lose part of their oxygen when heated in the same way.

(3) When potassium chlorate (KClO_3) is heated it gives off its oxygen, but in order to obtain the evolution of oxygen at a lower temperature, it is mixed with one-eighth its weight of manganese dioxide. This is the method usually followed in the laboratory, and was employed for making large quantities of oxygen before the discovery of cheaper processes.

(4) When barium dioxide (BaO_2) is heated it gives off an atom of oxygen, and yields the lower oxide (BaO). This process has been employed on a very large scale for the preparation of oxygen, the advantage being its economical working. It is known as the Brin process, and was originally patented in 1880. The barium monoxide which is formed also has the property of absorbing oxygen when



Oxygen. Diagram showing the Linde-Hampson process of oxygen production. See text

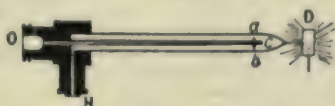
heated to a dull redness in the air. Hence, by alternately forming and decomposing the barium dioxide, the same quantity of barium salt can be used over and over again.

(5) The preparation of oxygen from liquid air depends upon the fact that the two chief constituent liquid gases, nitrogen and oxygen, evaporate at different temperatures, nitrogen being more volatile than oxygen. Methods of separating them which are worked on a large scale have been devised. Liquid air was first prepared by Sir James Dewar, and the apparatus for manufacturing it on a large scale was devised by Hampson.

The production of oxygen from liquid air by the Linde-Hampson method is illustrated diagrammatically on the previous page. A is a wooden container; B a rectifying column down which liquid air trickles when formed from plates *b b* into receiver C; D is an inlet for compressed air which traverses the small tube coils *d, d*, and coil *d'* to expansion valve E, thence by *d''* through funnel mouth into the column B, thence partly into funnel and pipe *d'* to coil F and out at F', and partly through funnel and pipe G into interchange coil H and out at H'. Nitrogen is withdrawn through pipe G and oxygen as vapour through F' and D. J is a regulating hand-wheel of the expansion valve E.

(6) Other methods of preparing oxygen may be summarised. The peroxides or perborates of sodium or other alkalis give off oxygen when moistened with water, especially if they are previously mixed with a catalyst. This method is employed for producing oxygen under the name of "oxylith," and also in preparing tablets and salts used for oxygen baths. When a concentrated solution of bleaching powder to which a little cobalt oxide has been added is heated, oxygen is given off. Oxygen is also evolved from peroxide of hydrogen, especially when it is acidified with sulphuric acid and a solution of potassium permanganate is added gradually. Oxygen is employed in medicine in cases of pneumonia and for supplying oxygen to confined spaces, *e.g.* in submarines and coal mines, and for divers. Maturing wines and obtaining high-temperature flame are other uses. Oxygen is supplied on a commercial scale compressed into steel cylinders of various sizes, small ones being available for medicinal oxygen, and larger ones for use with searchlights or optical lanterns. See Atmosphere; Combustion; Hydrogen; Ozone.

Oxyhydrogen Flame. Oxygen and hydrogen burnt together in a special jet. A flame of very high temperature is so obtained, in which refractory metals such as platinum can be readily melted. A blow-pipe arrangement is used to obtain the highest temperatures, the



Oxyhydrogen Flame. Sectional diagram of blow-pipe used to produce flame. O. Oxygen admission. H. Hydrogen admission. a, b. Studs keeping oxygen pipe central. a. Gas-mixing chamber. D. Lime cylinder rendered incandescent.

two gases being kept separate up to the point of the jet, where they are ignited. Autogenous soldering, for which the oxyhydrogen flame was formerly employed, is now done with thermite. When the oxyhydrogen flame is allowed to impinge on a cylinder of lime an intense white light is obtained, known as the limelight, or Drummond light. See Magic Lantern.

Oxyrhynchus. Ancient town near Behnesa, on the Bahr Yusuf, Upper Egypt. The Egyptian name was Permazet. The oxyrhynchus ("sharp-snouted") fish (*Mormyrus*) was venerated in the vicinity. In the 5th century the town had 12 churches, 10,000 monks, and 12,000 nuns. See Egypt Exploration Society; Papyrus.

Oxytropis. Genus of perennial herbs and shrubs of the natural order Leguminosae. They are natives of Europe, Asia, and N. America. The leaves are divided into two rows of leaflets. The flowers are pea-like, purple, white, or pale yellow, grouped in spikes or sprays.

Oyama, IWAO, PRINCE (1842-1916). Japanese soldier. He visited Europe during the Franco-Prussian War, and in the Civil War of 1877 led a brigade of the Imperial army. During the war with China, 1894-95, he commanded the second army, whose exploits included the taking of Port Arthur and Wei-hai-wei. In the Russo-Japanese War, 1904-5, now marquis and a field-marshal, he was in chief command. His skilful conduct of operations, notably at the battles of Liao-Yang, Shaho, and Mukden, brought him the title of prince in 1907. The year before he had received the British Order of Merit. He died Dec. 12, 1916.

Oyapoc. River of S. America. It rises in the Tumac Humac Mts., and flows N.E. to the Atlantic Ocean, forming the E. frontier of French Guiana. On its upper

course are the Matouchi Falls, while rapids interfere with navigation. Its length is 280 m. Oyapoc village, 25 m. from the sea, trades in rubber, balata, and gold.

Oyer and Terminer. Anglo-French legal term meaning to hear and determine. In England courts of assize sit by virtue of the commission issued by the king to the persons therein named, one of whom, at least, is always a judge, to hear and determine all causes, and to deliver all gaols of the prisoners there awaiting trial for all treasons, felonies, and misdemeanours. Sometimes special commissions are issued, as when there have been serious riots.

Oyster (*Ostrea*). Genus of bivalve molluscs. Over 100 recent species and over 500 extinct ones are known to science. In the edible oyster (*O. edulis*), common round the British coasts, the valves of the shell are unequal, the left valve by which the animal is attached to the rock being the larger and concave, while the right valve is thinner and nearly flat. The exterior of the shell is rough and irregular, notably the left valve, and the interior is white and pearly.

Unlike most of the bivalves, the oyster having taken to a sedentary life lacks the tough muscular foot; and the delicacy of the animal's flesh is partly due to this fact. There is also only one nearly central muscle—a modified posterior one—for closing the shell, instead of the anterior and posterior ones usual in the Pelecypoda. The mantle edges, with which the gills are concrescent, are open all round, and there are thus no syphons. For this reason the oyster can only feed by lying with its valves slightly open, when the minute organisms on which it subsists are brought to its mouth by current movements in the surrounding water. Eyes of a simple character are arranged along the edges of the mantle, but how far the oyster can see is unknown. It is, however, very sensitive to the change from darkness to light.

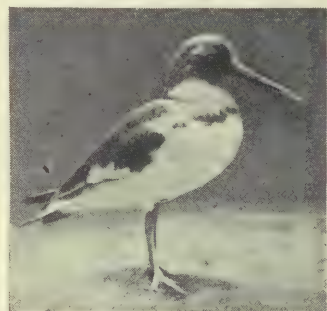
The oyster is extremely prolific, producing from 600,000 to over 1,800,000 eggs in the season, while one American species of oyster is estimated to produce 100,000,000 ova. The spawning time is from May till August, during which the oyster is out of season. The ova pass from the ovary to the folds of the mantle edges, where they hatch out, and the young are periodically discharged as a cloud of spat. At this period, known as the glochidium or veliger stage, the young swim freely in the water

by means of cilia and are the prey of numbers of enemies. The survivors soon attach themselves to rocks or other objects, where they remain for the rest of their lives.

Economically the oyster has been highly valued for many centuries for the table; and the presence of its shells in vast numbers in the kitchen middens and shell heaps of prehistoric man proves that it was equally liked before the dawn of history. It is one of the very few animals that are preferred in the raw state by modern civilized man. Most epicures hold that a cooked oyster is a good thing spoilt. British native oysters—notably those laid down on the beds at Whitstable—have the reputation of being the best in the world. Small pearls of no value occasionally occur in the edible oyster; but the pearls of commerce are the product of the so-called pearl oyster, *Avicula margaritifera*, a mollusc belonging to a wholly different family. See Bivalves; Mollusca; Pearl.

Oyster Bay. Health resort and residential town of New York, U.S.A., in Nassau co. It stands on a picturesque, well-sheltered bay on the N. coast of Long Island, and is served by the Long Island Rly. and a line of steamers plying to New York city. It has excellent bathing facilities and other attractions. Oysters are largely cultivated. It was the home of Theodore Roosevelt. Pop. 30,000.

Oyster Catcher OR **SEA PIE** (*Haematopus ostralegus*). British shore bird belonging to the plover tribe. The head and upper parts are black and the under parts white, while the long and straight beak is reddish orange. It is found



Oyster Catcher. Specimen of the British shore bird

W. S. Burridge, F.Z.S.

about all the more rocky parts of the coast, and feeds upon molluscs, crustaceans, and marine worms.

Oystermouth. Watering-place and urban dist. of Glamorganshire, Wales. It stands near Mumbles Head, 5 m. from Swansea, and is

served by the L. & N.W. and Swansea and Mumbles Rlys. It has a pier, and the culture of oysters is an industry, although less extensive than formerly. There was a Roman station near, and a castle was built at Oystermouth soon after 1100. Pop. 6,100. See Gower.

Ozark Mts. (Fr. *Bois aux arcs*, wood for bows). Wooded plateau of U.S.A. Lying between the Missouri and Arkansas rivers, it occupies a large portion of the states of Arkansas and Missouri, and penetrates into Oklahoma and Kansas, its average height being from 1,500 ft. to 2,000 ft. The Ouachita Mts., S. of the Arkansas river, are an extension of the Ozarks.

Ozobrome Process. Method of making photographs by the carbon process (*q.v.*), but without its attendant drawbacks of daylight printing, reversal of the picture, and uncertainty of exposure. A wet print or bromide paper (*q.v.*) is pressed in contact with carbon tissue, soaked in solu-



Oyster Bay, New York.

Flagstaff and town hall

tion containing bichromate, bromide, ferricyanide, and acid sulphate of potash. After a few minutes the two are separated, and the tissue developed in hot water, as in the ordinary carbon process. The bromide print, which becomes bleached in the operation, can be restored to its original state with a developer and used again.

Ozoena OR **ATROPHIC RHINITIS**. Affection of the nose characterised by the formation of crusts which have an unmistakable penetrating odour. The patient is unaware of this, as his sense of smell is lost.

Ozokerite (Gr. *ozein*, to smell; *kēros*, wax). Solid hydrocarbon mineral resembling beeswax. It was first discovered in 1833 at Slanic, in Rumania. It is mined in various parts of the world, and, geologically, is always accompanied by petroleum. The white ozokerite is used for candle-making. A semi-solid substance is also obtained resembling vaseline, while the residue in the stills, a hard, black, waxy mass, is employed, mixed with indiarubber, for insulating electrical cables.

Ozone (O_3). Gas with a peculiar, sour somewhat resembling that of dilute chlorine. It was observed in 1785 that when an electric spark is passed through oxygen a distinct odour is apparent, but it was not until 1840 that the production of a definite gas—ozone—was proved. It is a form of oxygen containing three atoms in the molecule against two atoms in a molecule of ordinary oxygen. The gas readily changes into ordinary oxygen, but has distinct properties. The peculiar odour of the air noticed in sea breezes is due to the presence of ozone. It is produced in small quantities by the slow oxidation of phosphorus, but is formed on a large scale by the discharge from an electrical machine in oxygen or air.

When ozone is strongly compressed an indigo-coloured liquid is obtained. Ozone is one of the most powerful oxidising agents known, and this property is utilised in a number of ways, *e.g.* the purifi-

cation of air, ozone being employed for this purpose on a large scale on the Central London Rly.; for medicinal use in tuberculosis and whooping cough; for sterilising drinking water; for bleaching waxes, fats, fabrics, and yarns; for aging wood for musical instruments; for oxidising or thickening oils, for maturing wines and spirits, and for sweetening foul beer casks.

Ozotype. In photography, pigment printing process, patented by Thomas Manly in 1899. The paper, when sensitised with a solution containing a bichromate and a manganous salt, and dried in the dark is exposed under a negative until a light brown image is printed out. A piece of pigment plaster is soaked in an acetic bath containing a reducing agent. The washed print is then applied to the plaster under the surface of the bath, and the two are squeezed together, and laid by for 30–60 minutes. They are then separated under water at about 107° F., and all soluble gelatine is washed away, thus leaving the developed image. See Carbon Process; Photography.



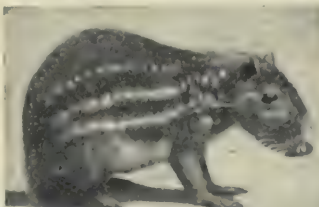
P. Sixteenth letter of the English and Latin alphabets. It is a voiceless labial or lip-sound. Its normal sound is that in *peck*, although in some cases it is mute, or nearly so, as in *psalm*, *attempt*. P is intrusive between *m* and *t*, as in *empty*. Most, if not all, English words beginning with *p* are borrowed from other languages. The combination *ph* in words derived from the Greek is pronounced *f*, as in *philology*; in *apophthegm* and *phthisis* it is not heard. See Alphabet; Phonetics.

Paardeberg, BATTLE OF. Fought between the British and the Boers, Feb. 18, 1900. Cronje with a force of Boers was holding the entrenchments at Magersfontein, while French, with the main army of Lord Roberts behind him, marched to cut him off from Bloemfontein. This move forced Cronje from his camp, and, with 5,000 men and many women and children, he was soon marching by the side of the Modder to the Orange F. S. Near Paardeberg Hill the British came in touch with him, and while the cavalry and infantry were drawing nearer, the Boers entrenched themselves in the dry bed of the Modder. On Feb. 18 they were attacked from both sides, but when night fell the British infantry had lost heavily, and the Boer position was untaken. By order of Roberts the attack was not renewed, but starvation did its work, and on Feb. 27 4,000 Boers surrendered. The British, with 15,000 men in the field, lost 1,262 killed and wounded. See South African War; consult Famous Modern Battles, A. H. Atteridge, 1911.

Paarl, THE. Town of Cape Province, S. Africa. It stands on the Berg river, 38 m. from Cape Town, with which it is connected by rly. In the surrounding district the vine is grown; other industries are granite quarrying and the building of wagons and carriages. The town, which extends for about seven m. along the river bank, was founded by the Dutch before 1700. The name means pearl. Pop. (whites) 6,000. To the W. of the town is the Paarl Mt., on which are three gigantic boulders.

Pabjanice. Town of Poland. It is in the dist., and 22 m. N.W., of Piotrkow, on the Dobrzyńska. It has numerous factories connected with the textile industries of the Lodz dist. Pop. 39,000. Pron. Pabianits-ě.

Pabna. District and town of Bengal, India, in the Rajshahi div. The dist. is in the corner between the Brahmaputra and the Padma distributary of the Ganges. Two-thirds of the area is cultivated. Rice and jute are the chief crops. The town stands on the left bank of the Padma. Area, 1,851 sq. m. Pop., dist., 1,429,000; town, 19,300.



Paca or Spotted Cavy, S. American rodent related to the agouti
W. S. Berridge, F.E.S.

Paca OR SPOTTED CAVY (*Coelogenys paca*). Rodent mammal. Related to the agouti, it is found in Central and S. America. Its fur is brown with rows of white spots along the sides of the body. It is about 2 ft. long, and in form suggests a rabbit without the characteristic ears or the long hind limbs. It lives in burrows, does great damage to the crops, and its flesh is highly valued.

Pachacamac (Quichua, earth-maker). Ancient Peruvian deity. A creator-god, he superseded the old tribal deity of the Chincha peoples dwelling in the littoral valleys from Chancay to Nasca. He was afterwards absorbed into the Inca pantheon as a local presentation of the Aymara deity Viracocha, and was specifically the god of earthquakes, whose rumblings were deemed to be his voice.

Pachacamac. Ruined city of Peru. It stands on the coast, about 20 m. from Lima. It was the sacred city of the Yuncas and had a temple, evidently a large and magnificent structure, of which some ruins remain. Other ruins are of later sacred buildings erected by the Incas. The city was plundered by Pizarro, and the site has been excavated by the university of Pennsylvania.

Pacheco, FRANCISCO (1571-1654). Spanish painter and writer on art. He was born at Seville and studied under Luis Fernandez. He is best known as the father-in-law and instructor of Velazquez, and as author of a dogmatic Treatise on Painting. He passed two years at Madrid with Velazquez, and died at Seville.

Pachino. Town of Italy, in S.E. Sicily. It is situated in the prov. of Syracuse, 5 m. N.W. of Cape Passero and 13 m. by road S. of Noto. Pop. 11,000.

Pachisi (Hind. *pachīs*, twenty-five). National game of India. It is played on a chequered cruciform board, each arm of the cross containing three rows of eight squares, the centre being one large square. The middle squares at the four tips and the fourth square from the end on the outside rows of each arm, are designated castles, within which spaces the pieces of the players are safe. There are four players, two acting in partnership, each having four men, coloured yellow, green, red, and black respectively. The moves are regulated by the throwing of cowries or dice, each piece starting from the central square, travelling down the middle of its own particular arm of the cross, and then round the board, returning up the arm and into the central square from which it started. A piece is taken by another moving on to the same square. The winning side is that which first gets all eight pieces round the board and home. See Games, Ancient and Oriental, E. Falkener, 1892.

Pachmann, VLADIMIR DE (b. 1848). Russian pianist. Born at Odessa, July 27, 1848, he studied



Vladimir de Pachmann, Russian pianist

great cities of Europe. He frequently visited London, where his interpretation of Chopin's music was held in high esteem.

Pachmarhi. Hill station and sanatorium of the Deccan, India, in the Central Provinces. Situated on the Mahadeo range, separating the Godavari from the Nerbada valley, it is 3,500 ft. above mean sea level, and is seat of the govt. of the Central Provinces and Berar during the hot weather. Its name is sometimes applied to the Mahadeo range. Pop. 3,800.

Pachuca. City of Mexico, capital of the state of Hidalgo. Known also as Hidalgo, it is situated among mts. at an alt. of 8,150 ft., 57 m. N.E. of Mexico city, in a silver-mining district. Pop. 39,100.

Pachydermata (Gr. *pachys*, thick; *derma*, skin). Name given by Cuvier to those ungulate mam-

under his father, Vincent de Pachmann, a professor at Odessa, and then in Vienna. In 1878 he appeared at the Gewandhaus concerts in Leipzig, and afterwards in most of the

mals which have thick skins, as the elephant, rhinoceros, and hippopotamus. The term is obsolescent. See Ungulata.

Pacific Cable. Submarine telegraph cable between San Francisco and Japan. It touched Hawaii, Midway Island, and Guam on its first construction in 1903, and was later continued from Manila to Shanghai and thence to Japan by the Bonin Islands. A branch line runs from Guam to Yap (*q.v.*), lines radiating from the latter to Japan. It is owned by the U.S.A. A British Pacific cable connects British Columbia with Australia. See Telegraph.

Pacific Ocean. Largest of the oceans of the globe. It embraces about three-eighths of the total sea area. Northwards it is very definitely limited by the narrow Bering Strait, which contains a belt of shallow water stretching from the E. Cape of Asia to the American Cape Prince of Wales. Like the Atlantic, it is widely open to the S.

The Pacific differs from the Atlantic, not only in shape, but in its greater mean depth, which is 2½ m. as against 2 m., and in its greater absolute depth, for the deepest sounding hitherto obtained is that of 5,348 fathoms off Mindanao, in the Philippines. There is no central ridge as in the



Pacific Ocean. Chart of the ocean, showing steamship routes and cables between the coasts of Asia, Australasia, and America

Pactolus. Ancient brook in Lydia, famous for the gold found in its sands in classical times. It is believed to be the modern Sarabat (*q.v.*).

Padang. Town and seaport of Sumatra. Situated nearly in the middle of the W. coast, it is the terminus of a rly. line to the interior, and has considerable trade from the neighbouring highlands and islands. The harbour is 3 m. S. of Emmahaven, which supplies coal from the Ombilin coalfield. Coffee, copra, tobacco, gum, and hides are exported. Pop. 47,600.

Padaung. Township of Burma, in the Prome dist. The town is one long street along the right bank of the Irawadi on the road from Prome into Arakan. Pop. 47,500. See Burma.

Paddington. Met. bor. of the co. of London. Between Marylebone and Kensington, it is intersected by the Harrow Road and a branch of the Grand Junction Canal, and includes the terminus of the G.W.R., completed 1856, and the dists. of Maida



Paddington arms

Vale, Tyburnia, and Bayswater, with the busy shopping centre of Westbourne Grove, named after the Westbourne stream, which was used to form the Serpentine (*q.v.*). In addition to the town hall, enlarged in 1906, the bor. contains S. Mary's Hospital, which was founded 1845; a lock hospital and asylum, workhouse and infirmary, municipal baths, and technical institute. In



the churchyard of S. Mary's, Paddington Green—the parish church, 1788–1845, when it was superseded by S. James's—are the graves of Sarah Siddons, Benjamin Haydon, and Joseph Nollekens. Westbourne Park Baptist Chapel is associated with the work of Dr. Clifford.

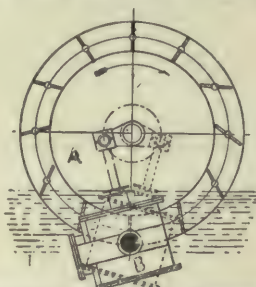
The open spaces include the recreation ground of 27 acres at Kilburn Park, and the old cemetery of S. George's, Hanover Square, in which Laurence Sterne was buried, and from which his body

is said to have been exhumed by body-snatchers. Notable residents of Paddington have included, in addition to Sarah Siddons, Robert Stevenson, Robert Browning, the 1st Baron Coleridge, John Oliver Hobbes, Herbert Spencer, and Sir Rowland Hill. The manor, anciently attached to Westminster Abbey, was given by Edward VI to the bishops of London, an episcopal connexion recalled by the names of several of its thoroughfares, *e.g.* Bishop's Road. Two members are returned to Parliament. Pop. (1921) 144,273. See London.

Paddington. Suburb of Sydney, New South Wales. It has an imposing town hall, and here are Victoria Barracks. Pop. 24,000.

Paddle Steamer. Vessel driven by means of paddle wheels. The first steam vessels were propelled by paddles, which are still largely used for river, channel, and lake steamers, particularly where the water is comparatively shallow.

Two systems of paddles are employed. In the one, the paddles or blades are rigidly attached to the framework of the wheel; in the other the blades are free to



Paddle Steamer. 1. Diagram of oscillating engine directly connected with crank A, on paddle wheel shaft, thus driving feathering wheel. Engine cylinder B oscillates on central trunnion, as shown by dotted lines. 2. River boat with paddle wheels. 3. Stern wheel steamer

turn through a certain angle and are operated by eccentric gear, as the wheel turns round, in such a way as to imitate in effect the feathering of an oar. They are known as feathering wheels. Special steamers have been built with a single, wide paddle wheel placed at the stern, for use in rivers where very shallow water occurs. Such were used in Mesopotamia during the Great War, and many are in use on the African lakes and rivers, and very large ones in America.

Paddy (Malay *padi*, rice). Rice in the husk. Paddy is the form used throughout the East, but in America it becomes baddy. Fields of growing rice, and also very low-lying fields, are called paddy fields. The Java sparrow, which feeds on rice, is called the paddy bird, and a paddy pounder is a machine for husking rice. See Rice.

Paderborn. Town of Prussia, in Westphalia. Situated at the source of the Pader, 50 m. S.W. of Hanover, the town has been partly rebuilt since the fire of 1875. The Romanesque and Early Gothic cathedral was restored 1891–93. The Romanesque chapel of S. Bartholomew was erected by Italian builders 1009–36. There are rly. workshops, printing establishments, tobacco, soap, and glass factories, and breweries. In the 11th century Paderborn was a Hanseatic town, passing to Prussia in 1859. Pop. 29,000.

Paderewski, IGNACE JAN (b. 1859). Polish pianist. Born at Kurylowka, Podolia, Nov. 18, 1859, he showed extraordinary talent on the piano when a child. He studied in Warsaw and Berlin, was a teacher until 1884, and, after studying for three years in Vienna, appeared as a performer.

He played first in London in May, 1890, and his tours in Europe and America placed him in the front rank of living pianists. He also won distinction as a composer, his works including the opera *Manru*. In 1900 he founded the Paderewski fund with £2,000 to reward compositions by American musicians. During the Great War he visited America. He became prime minister of reconstituted Poland in Jan., 1919, and represented it at the Paris peace conference. He resigned the premiership in Dec. of the same year. *Pron.* Pahd-er-efski.



J. J. Paderewski

Padiham. Market town and urban dist. of Lancashire, England. It stands on the Calder, 8 m. from Blackburn and 3 m. from Burnley, with a station on the L. & Y. Rly. The chief building is S. Leonard's Church, an old foundation rebuilt in the 19th century. The industries include the manufacture of cotton, while coal mines and stone quarries are worked in the neighbourhood. Market day, Fri. Pop. 14,000.

Padilla, JUAN DE (c. 1490-1521). Spanish insurgent. Born at Toledo, he entered the army as a youth, and in 1518 placed himself at the head of a popular movement against the subsidy granted by the cortes to Charles V. With a considerable body of armed men he seized Joanna, the king's mother, and with his insurgent army marched to Valladolid, but despite various successes he was defeated at Villalar, made prisoner, and executed, April 23, 1521.

Padishah. Eastern title. It is applied to the shah of Persia, the sultan of Turkey as ruler of the Ottoman Empire, the Great Mogul, by Indian natives to the sovereign of Great Britain as emperor of India, and by Orientals generally to European monarchs. The Persian *padshah* signifies lord king.

Padre (Lat. *pater*, father). Title given in certain Roman Catholic countries to a priest. During the Great War it came into use in the British navy and army as a general term for chaplains of all denominations. After the war a number of these chaplains formed a fellowship of *padres*. See Chaplain.

Padstow. Urban dist., town, and seaport of Cornwall, England. It stands on the N. coast, near the estuary of the Camel, 12 m. from Bodmin, with a station on the L. & S.W. Rly. The church of S. Petrock is an old building with some features of interest. S. Enoch's church has a Norman font. Padstow has a little shipping and

fishing, for which there is a harbour, and a trade in agricultural produce. It is also visited by pleasure seekers. There was a monastery at Padstow, its foundation being ascribed to S. Petrock. Padstow became a flourishing port, and is said to have been made a corporate town. The name is a corruption of Petrock's Stow. Padstow Bay is formed by the Camel. Market day, Sat. Pop. 2,500.

Padua. Province of Italy, in the N.E., in Venetia. It forms part of the Venetian plain and is crossed by the Adige, Brenta, and Bacchiglione. Wheat, rice, wine, and silk are the chief products. Area, 826 sq. m. Pop. 550,000.

Padua. City of Italy. It stands on several branches of the Bacchiglione, just above its confluence with the Brenta, 22 m. W. of Venice, for which it is the rly. junction. A triangular walled city, it occupies a strategic position on the Venetian plain.

In ancient days it was the chief town of Venetia, was the birthplace of Livy, and was sacked by Alaric and Attila. Nearly all the ancient monuments and buildings have been destroyed. The city was an-



Padua arms

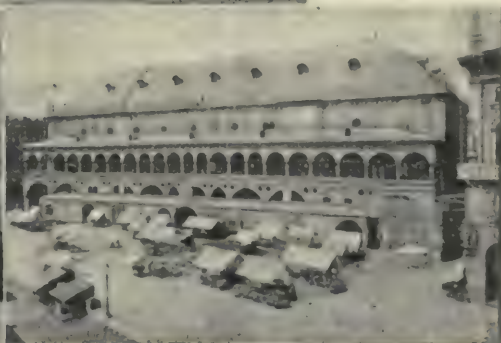
nexed by Venice in 1405. The university, founded in 1222, had sometimes 15,000 students, and was famous throughout the Middle Ages. Many streets are bordered by arcades; the Renaissance cathedral and the 13th century church of Sant' Antonio, before which stands Donatello's equestrian statue of Gattamelata, the soldier of fortune, are notable. The Madonna dell' Arena and the Eremitani contain frescoes by Giotto and Mantegna. Padua has some manufactures and a trade in agricultural produce. Pop. 105,000.

Paducah. City of Kentucky, U.S.A., the co. seat of McCracken co. It stands at the junction of the Tennessee and Ohio rivers, 170 m. S.E. of St. Louis, and is served by the Illinois Central and other rlys. and by river steamers. It trades in minerals, agricultural produce, tobacco, etc. Boat-building is an industry. Founded in 1827, Paducah was incorporated in 1828, and became a city in 1856. Pop. 24,700.

Paeon. In ancient Greece, name for a hymn. Originally a hymn of supplication against plague, so called from Paeon or Paeon, a god of healing, sometimes identified with Apollo, the paeon became a song of thanksgiving, used at festivals of Apollo, and also a war-song.

Paeligni. Tribe occupying the Apennine uplands east of Lake

Fucinus during the early Roman age. Their ethnic origin and primitive culture resembled those of the Marsi (*q.v.*), in whose war (91-89 B.C.) they shared, establishing in their fastness Corfinium, a short-lived republican capital. Another of their towns, Sulmo, was the birthplace of the poet Ovid.



Padua, Italy. 1. Loggia del Consiglio, an early Renaissance municipal building. 2. Church of Sant' Antonio and statue of Gattamelata. 3. Market place and Palazzo della Ragione, a 15th century law court

Paestum. Ancient city of Italy. It stands on the Gulf of Salerno, 24 m. by rly. from the city of Salerno. Founded by Greeks from Sybaris about 600 B.C., and originally called Poseidonia, became a Roman colony in 273 B.C. In the time of Augustus it was celebrated for its roses. Later of little importance, it became Christian, and in the 9th century was deserted by the inhabitants, after its destruction by the Saracens. Robert Guiscard despoiled the deserted city of its monuments and sculptures. There are remains of three Greek Doric temples, remarkably well preserved. These are the Temple of Neptune, 197 ft. long, 80 ft. wide; the so-called Basilica, and the Temple of Ceres. All three probably belong to the 6th century B.C. The city was surrounded by a wall partly preserved, and there are remains of a Roman amphitheatre and temple.

Pagan. Term synonymous with heathen. In classical Latin *paganus*, i.e. inhabitants of *pagi* or villages, who might be employed for occasional military service, were contrasted with *militēs* or professional soldiers. When the Christians were described as soldiers of the faith, the indifferent masses were regarded as civilians or non-combatants. Hence the term *pagan* was applied to all non-Christians, except Jews and Mahomedans, who were at first considered an heretical sect. In the Middle Ages the term *Paynim*, through Old French from Lat. *paganismus*, was applied indifferently to heathen and Mahomedans, falsely thought to be idolaters.

In a general sense, the word *pagan* is applied to anyone who makes no profession of religion, or acts irreligiously. In Elizabethan England *pagan* was a cant term for a paramour or a bastard. See Gentiles.

Pagan. Township of Upper Burma, in Myingyan dist. It is situated on the left bank of the Irawadi, at the N. end of the Pegu Mts. Until the end of the 13th century Pagan was the capital and a fine city with numerous pagodas; it is now almost deserted, although the modern township, which includes a considerable area, contains 70,000 people.

Paganini, Nicolo (1784-1840). Italian violinist. Born at Genoa of humble parentage, Feb. 18, 1784, he made his first public appearance when nine years of age. The development of his unique gifts as a violinist was largely due to his own efforts. He left his home in 1798 and began a wandering career, gaining fame

as a violinist of extraordinary powers.

In 1828 he extended his tours beyond Italy, visiting Vienna, Berlin, Paris, and England, where his appearance created the greatest curiosity and ex-



Paestum. Ruins of the ancient Greek colony in Southern Italy: top, Temple of Neptune, an example of 6th century B.C. architecture; below, the so-called Basilica, dating from the 6th century B.C.

citement. In 1833 he returned to Paris and spent the last years of his life in playing at concerts there and seeking good health in Italy and the S. of France. He died at Nice, May 27, 1840.



Nicolo Paganini

After Ingres

wildering musicians reveal him, not only as a genius, but also as something of a charlatan, and this combination of qualities has given rise to many extravagant stories about him. He composed many pieces for the violin, including some caprices which have been arranged for the piano by both Schumann and Liszt.

Page (Lat. *pangere*, to fasten). One side of a printed or written sheet, usually applied to the leaves of a book or a newspaper. Pagination is the act of marking the pages with consecutive numbers in order to facilitate reference.

Page. In feudal times, a youth of gentle birth in training for esquireship and knighthood, who acted as assistant to an esquire in attendance on a knight and his lady. Pages were trained in arms, armory (or heraldry), and the amenities of life, including the chase, music, and dancing, also receiving such instruction in the Humanities as was deemed necessary for persons of gentle birth. The order survives in the pages of honour attached to European

courts, youths who are trained at the expense of the sovereign, are allotted certain duties, and are usually given commissions in the household regiments or sovereign's bodyguard. In the United Kingdom, for instance, the sovereign has his pages-in-waiting.

In many large establishments there are young male attendants employed on light duties under the superintendence of a butler and known as pages. In the U.S. Senate and House of Representatives the attendants are known as pages. See Feudalism.

Page, Frederick Handley (b. 1885). British aeroplane designer. Formerly an engineer, he turned



F. Handley Page, British inventor

his attention to aeronautics in 1907, and after two years of experimenting he started business as an aeronautical engineer and designer, founding in June, 1909, the firm that bears his name. The first works were at Barking, where various types of machines were designed and constructed. He removed his works to Cricklewood in 1912. During the Great War he turned them over to the government, and designed several new types of aeroplanes. He was awarded the C.B.E. in 1918. See Aeroplane; Air; Handley Page.

Page, Thomas Nelson (1853-1922). American diplomatist. Born in Virginia, April 23, 1853, he was educated at the universities of Washington, Lee, and Virginia, graduating in law in 1874, and then

practising at Richmond, Va. In 1893 he devoted himself to literature, and during the next twenty years wrote a large number of books, mainly stories and essays of Virginian life, but including *Lives of Robert E. Lee* and *Thomas Jefferson*. In 1913-19 he was ambassador to Italy. He died on November 1, 1922.



Walter Hines Page

Page, WALTER HINES (1855-1918). American diplomatist and editor. Born at Cary, North Carolina, Aug. 15, 1855, he was educated at the Randolph-Mason College, Virginia, and was for a time at Johns Hopkins University. In 1890 he took control of *The Forum*,

after which he edited in succession *The Atlantic Monthly* and *The World's Work*. In 1899 he became a member of the publishing house of Doubleday, Page & Co. In 1913 Page was



W. H. Page, American diplomatist
Elliott & Fry

appointed ambassador to Great Britain. Failing health compelled him to resign in Aug., 1918, and he died at Pinehurst, North Carolina, Dec. 22, 1918.

Pageant. Word originally meaning the stand on which mysteries and other dramatic performances were given. Gradually it was extended to the performances, and has been used to describe an unusual display of any kind.

The revival of pageantry in England dates from the Sherborne Pageant of 1905, devised in celebration of the 1,200th anniversary of the foundation of the bishopric, school, and town of Sherborne, by S. Aldhelm in 705. At this the performers numbered 900. Over 50,000 spectators from all parts of the world paid for admission during the week. Pageants followed all over the country, especially at historic places such as Winchester, Warwick, Bury St. Edmunds, and York. The movement spread to the U.S.A., where also numerous pageants were held. These pageants were intended to be the festival of the town in which they were held, giving a living picture of its history from the earliest times to some recent period, in the form of an historical play employing

every artistic form of expression. They were given in some historic or beautiful spot, and prepared, managed, and performed by the townsfolk themselves, without any professional assistance. No individual derived any pecuniary benefit from them, but the profits were allocated by the town itself. Every costume, weapon, and article used was invented, designed, and made by local labour from materials purchased, and, if possible, manufactured in the town. Local poets or authors contributed to the book; the music was composed by local musicians and performed by local singers and players; the actors were all local amateurs.

Thus these pageants became schools of arts and handicrafts. For more than a year, in some towns for two years, the people were at work on the preparations. In every town some remarkable work was turned out, and much unsuspected talent revealed. Quite exceptional histrionic powers were brought to light, while the compositions of the various Masters of the Music were in every instance most successful. "Narrative Choruses" were contributed to all the above-mentioned pageants by James Rhoades. The pageant was divided into episodes, and each episode was acted by a separate group of performers. These were all massed in a great final tableau, and a march past.

The audiences were accommodated in covered grand stands, in which every seat was numbered and commanded an uninterrupted view. The Master of the Pageant had his box on the roof, whence he personally controlled the whole performance and prompted every entrance and exit by means of electric signals, reaching in some cases to a distance of more than a quarter of a mile. Not one spectator ever saw or heard the Master of the Pageant.

Louis N. Parker

Pagenstecker, HERMANN (b. 1844). German oculist. Born Sept. 16, 1844, he was educated at



H. Pagenstecker,
German oculist

Wiesbaden, afterwards studying medicine at several universities, among them Edinburgh and Paris. He made a speciality of the eye, and, having returned to Wiesbaden, became, in 1879, directing physician of the institution for the cure of the eyes there. His reputation attracted patients from all parts of Europe,

and he wrote books upon matters affecting the eye.

Paget. Famous English family. Its first prominent member was William Paget, an official of the city of London, who lived about 1500. His eldest son, William Paget (1506-63), served Henry VIII in various ways, becoming a secretary of state. He was also a high official under Edward VI and Mary, and having been created, in 1549, Baron Paget of Beaudesert, died June 9, 1563. He obtained a good deal of wealth, including Beaudesert, Staffs, still the seat of the Pagets, and property in London.

The title passed in turn to Paget's sons, Henry and Thomas, and then to other descendants, while younger members of the family were also prominent in public life. Thomas, the 3rd baron, was attainted, and William, the 6th baron, was ambassador at Vienna and Constantinople. Henry, the 7th baron, was made earl of Uxbridge in 1714, but this title became extinct in 1769, when the main line of the family failed. It was restored in 1784 for Henry Paget, who had inherited the estates and the barony, while his son Henry, the 2nd earl, was made marquess of Anglesey in 1815 in recognition of his services at Waterloo. Many other members of the family were famous either as soldiers or sailors. See Anglesey, Marquess of; consult also *Memoirs of the Hon. Sir C. Paget*, with a Short History of the Paget Family, E. C. Paget, 1913.

Paget, SIR ARTHUR HENRY FITZROY (b. 1851). British soldier.

Born March 1, 1851, he joined the Scots Guards in 1869. He saw service in the Ashanti War, 1873, Sudan, 1885, Burma, 1887-88, and was in command of an infantry brigade in the S. African War. Commander of



Sir A. H. Paget,
British soldier
Russell

the 1st division 1st Army Corps, 1902-6, and the Eastern Command, 1908-11, he was commander-in-chief in Ireland, 1911-17, during which period he had to deal with the critical situation created by the Home Rule bill. Knighted in 1907, he was created G.C.B. and became full general in 1913.

Paget, SIR AUGUSTUS BERKELEY (1823-96). British diplomat. Born April 16, 1823, he was a grandson of the 1st earl of Uxbridge. In 1840 he entered the civil service,

and in 1841 was transferred to the foreign office. From 1846-52 he was an attaché at Paris, after



Sir Augustus Paget,
British diplomat

which he was at Athens. Paget was then in turn chargé d'affaires at The Hague, Lisbon, and Berlin, and a minister at Dresden and Copenhagen.

From 1867-83 he represented his country at Rome, and from 1884-93 was ambassador at Venice. In 1853 he was knighted, and he died at Hatfield, July 11, 1896.

Paget, Sir James (1814-99). British surgeon and pathologist. Born at Yarmouth, Jan. 11. 1814 he became a student at S. Bartholomew's Hospital, London, 1834, and demonstrator in the hospital 1839. He rapidly became famous as a pathologist and surgeon, his lectures, 1847-52, as professor of anatomy at the College of Surgeons, afterwards published in book form, being a standard text-book for many years. In 1871 he was made a baronet, and in 1875 president of the Royal College of Surgeons. He died Dec. 30, 1899. *See* Pathology.



Sir James Paget,
British surgeon
After Millais

Paget, Violet (b. 1856). British novelist. Known by her pen-name of Vernon Lee, she settled in Italy in 1871. She published her first book in 1880, *Studies of the Eighteenth Century in Italy*. Many of her subsequent works also dealt with Italy, including historical sketches and essays. Among these were *Euphorion*, *Essays on Renaissance*, 1884; *Renaissance Fancies and Studies*, 1895; *The Spirit of Rome*, 1905. She also wrote *A Phantom Lover*, 1886; *Hauntings*, 1890; *Genius Loci*, 1903, and its sequel *The Enchanted Woods*, 1904; *Louis Norbert*, 1914; *Satan the Waster*, 1920. She also wrote the play *Ariadne in Mantua*.

Pagoda. Term in European use denoting a tower-like structure in India and E. Asia. A 16th century Portuguese corruption either of *dagoba*, a stupa or tope, or of Pers. *ut-kadah*, an idol-temple, it designates in India temples with pyramidal towers. In Burma it denotes Buddhist *paya* or *sedī*, a bell-shaped structure with conical top, often gilded. The most

venerated are at Rangoon, Mandalay, Prome, and Pegu. The Siamese *phra* is bell-shaped, with slender annulet spire, as at Phra Pathom, Ayuthia, or pyramidal, with domed cylindrical turret, as at the Wat-ching in Bangkok. The Japanese square timber-built *gojūto* retains the Korean form, with an odd number of roofs.

China perhaps derived its earliest towers, as at Sian-fu, the oldest extant, from the Babylonian square seven-storeyed *ziggurat*. The later Chinese *taa* became octagonal, with an odd number of storeys; for instance three in the Temple of Heaven at Peking; seven at Ningpo; nine in the Porcelain Tower at Nanking, which was destroyed in 1854. The Kew Pagoda, 10-storeyed, erected 1761, follows the Chinese pattern. *See* Japan; Kew Gardens.

Pagoda Tree (*Sophora japonica*). Tree of the natural order Leguminosae. It is a native of China and Japan. The long bluish-green leaves are divided into about a dozen oval leaflets, and the small cream-coloured flowers are lavishly produced in large clusters. The Chinese obtain from the flowers a fine yellow dye, used for dyeing the silk robes of the mandarins.

Pago Pago. Natural harbour on the S. coast of Tutuila, one of the Samoan Islands. Called also Pango Pango, it belongs to the U.S.A. which has used it as a naval station since 1839. Its right to do so was established by treaty in 1872, and later was allowed to lapse, but in 1889 the right of the U.S.A. to the island of Tutuila was recognized by the Berlin General Act. The town is the seat of administration for American Samoa. The harbour is the crater of an extinct volcano.

Pahang. Easterly Federated Malay State, British Malaya. It has a long coast on the S. China Sea, lies between Johore on the S. and Kelantan and Trengganu on the N., and is separated from the other three states of the Federation by high mts. It consists almost entirely of the basin of the Pahang.

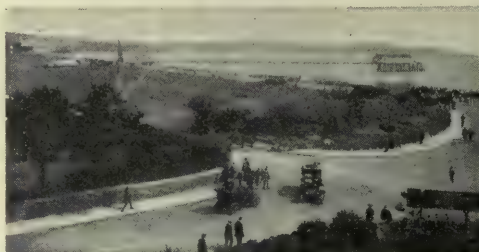
Pahang was an independent Malay state until 1881, when a British resident was appointed at the sultan's request. Sparsely populated, it has not been exploited. Pekan at the mouth of the Pahang is the seat of the sultan; Kuantan, farther N., is connected by road with Kuala Lipis. Kuala Lipis, the administrative capital, is connected by motor road with Kuala Kubu in Selangor, and by rail with Bahan in Negri Sembilan. Its area is 14,000 sq m. Pop. 119,000. *See* Malaya.

Pahlavi OR PEHLEVI (Pers. *Pahlav*, Parthian). Name of a cursive script of Aramaic origin used in writing Persian during the Sassanian period. It employs a great many Semitic words which were read as their Persian equivalents. The name is also often used for the Persian language of the same period, otherwise called Middle Persian.



Pagoda Tree. Branch with leaves, and the flowers from which a yellow dye is obtained

Paignton. Urban dist. and watering-place of Devon, England. It stands on Tor Bay, 2 m. from Torquay, with a station on the G.W. Rly. The chief building is the Perpendicular church of S. John, which contains some interesting features. The Bible Tower is part of the old palace of the bishops of Exeter. It is so called because here Miles Coverdale prepared his translation of the Bible. The attractions include a pier and good sands. Pop. 11,000.



Paignton, Devonshire. The sea front, looking across Tor Bay towards Torquay

Frith

Pain (Lat. *poena*, punishment, pain). Suffering or distress of body or mind. It was formerly regarded as a common sensation, one which could be produced by the stimulation of any and every sense-organ. Pain is distinguished subjectively by its lively and disagreeable feeling, objectively by strong reflex actions leading to capricious movements. Pain which originates in a different place from where it is felt is called *eccentric*; when the feeling is transferred from one nerve fibre to another not immediately concerned it is called *irradiated*; irradiated pains occurring at a great distance from the place affected are called *sympathetic*. See *Pleasure*.

Pain, BARRY ERIC ODELL (b. 1864). British author. Born Oct. 22, 1864, and educated at Sedbergh

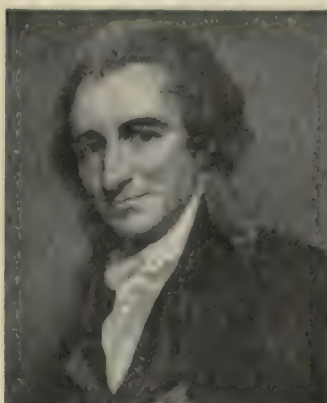
School and Corpus Christi College, Cambridge, he turned early to literary work, and became known as a writer of humorous stories and novels. In a Canadian *Canoe* appeared in 1891, and among his many subsequent works are *Stories and Interludes*, 1892, *The Kindness of the Celestial*, 1894, *Eliza*, 1900, *Memoirs of Constantine Dix*, 1905, *Wilhelmina in London*, 1906, *Eliza Getting On*, 1911, *Exit Eliza*, 1912, and *Innocent Amusements*, 1918. In such books as *Grey Tales* he shows himself a writer of serious short stories with a fine sense of situation and finished technique. His *Collected Tales* were published in 1916, and he wrote *The Short Story*, an able study in literary craftsmanship, in 1915.

Paine, SIR GODFREY MARSHALL (b. 1871). British sailor and airman. Entering the navy in 1885, he became captain in 1907, and was appointed commandant of the Central Flying School, a post he retained until 1915. He commanded the R.N.A.S. training establishment at Cranwell, 1915-17, was fifth sea lord of the Admiralty and director of naval air service, 1917-18. He was inspector-general R.A.F. in 1919, retiring in 1920. He was knighted in 1918 and given the rank of air vice-marshal in 1919.



Sir G. M. Paine,
British sailor
Lafayette

Paine, THOMAS (1737-1809). British author. Born at Thetford, Norfolk Jan. 29, 1737, son of a



Thomas Paine

After Romney

small farmer and staymaker, he tried various occupations, including that of exciseman. Dismissed in 1774, he in the same year met Benjamin Franklin in London, and, apparently under his advice, emigrated to America. Settling in Philadelphia, he issued in 1776 a pamphlet entitled *Common Sense*, putting the case for independence, which Washington admitted to have had great influence on the colonists. He fought in the U.S. army, and received a government appointment, which he lost through divulging state secrets.

In 1787 Paine returned to England and issued *The Rights of Man* as a counterblast to Burke's *Reflections on the French Revolution*. The work made a great sensation and Paine was indicted in 1792, but escaped to France, where he had an enthusiastic reception. Subsequently he fell foul of Robespierre, was imprisoned and narrowly escaped the guillotine, but was released in 1794 on claiming American citizenship. The first part of *The Age of Reason* had been finished just before his arrest, and the second part followed in 1795. The book was an attack upon revealed religion from the point of view of the 18th century deists, accompanied by all the rigour and occasional brutality which characterised Paine's writings. He died in New York, June 8, 1809. The standard biography is that by Moncreux D. Conway, 1892.

Painesville. City of Ohio, U.S.A., the co. seat of Lake co. It stands on the Grand river, 30 m. E.N.E. of Cleveland, and is served by the New York, Chicago and

St. Louis and other rlys. Nursery gardening is carried on in the neighbourhood, and soda-ash, flour, foundry and machine-shop products, and motor vehicles are manufactured. Painesville was laid out in 1800, incorporated in 1832, and became a city in 1902. Pop. 7,300.

Painlevé, PAUL (b. 1863). French politician. He became professor of science at Lille in 1880.



Paul Painlevé,
French politician

and at the Sorbonne seven years later. Interested in aviation, he was one of the first passengers carried by Wilbur Wright in France. He was minister of public instruction and inventions, 1915, minister of war, March-Sept., 1917, and prime minister, Sept.-Nov., 1917. He was criticised for the failure of the French offensive of April, 1917, which Nivelle's supporters maintained was due to the interference of the cabinet with military plans. He defended himself against these charges, and published a full account of his own part in the 1917 campaign in a special number of *La Renaissance Politique, Littéraire, Economique*, in 1919. He became advisory director-general to the Chinese Government rlys. in 1920, and in April 1925 again became prime minister.

Paint. Coloured mixture prepared for spreading on a surface. The purpose of painting is to embellish or preserve the surface itself, or to make pictorial representations. Paints consist mainly of dry coloured powders called pigments, mixed with liquid media or vehicles. They are applied by brushes, edged or pointed tools, spraying appliances, or by dipping. They are distinguished from dyes and stains in not penetrating the surface, their colouring matter being insoluble in the media used.

For domestic and industrial paintwork the principal materials used are oil-paints. In these the liquid media are derived mostly from vegetable drying oils, the best being linseed, which forms an elastic skin more rapidly than any other. It is sometimes mixed with or replaced by tung, cottonseed, soya bean, and other oils.

Prehistoric man employed paint for ornamenting the body, living or dead, as well as for ritual and decorative designs. Among the mineral pigments first used were red and yellow ochres, traceable in palaeolithic Europe. Until

modern times paints were ground with hand mullers on hollow stones or with primitive pestles and mortars. Pigment-grinding is now largely effected in horizontal, edge-runner, or conoidal mills, either dry or wet, the mixtures being made ready in mills with triple rolls. Oil-paints usually require thinning down with turpentine, but for small work ready-mixed paints are procurable.

The factors considered in estimating the quality and suitability of paints, apart from tint, include body or opacity, covering power, drying power, and permanence. One quality may cover a large surface with an opaque coating; another, sometimes merely because less finely ground, may need for the same effect a thicker coat or several coats. Drying power—as well as elasticity—depends upon the medium.

Pigments are of mineral or organic origin. The former may be chemically elements, compounds, or mixtures, natural or artificial. Their durability often varies with the fineness of the grinding, hence the excellence of lampblack and sublimed lead. They are not equally effective in all media; the opacity of whitening in water disappears when it is mixed with oil. Mixing recipes differ according to whether paint is required for woodwork, iron, stucco, or cement. The proportions vary greatly; in 100 parts of red lead paste there are 93½ red lead and 6½ oil, whereas 20 parts of lampblack need 80 of oil. White lead, because of its combined opacity and covering and drying power, is used as a base in many common oil-paints; by the admixture of one or more other pigments, called stainers, an ample colour-range is obtained. As it is poisonous, it is often replaced by lithopone or by zinc white.

Besides their colouring power, paints subserve the purpose of preservation, by preventing rust in metals, decay in timber, and the like. When other properties are desired, appropriate substances are introduced. Paints become waterproof or damp-resisting by adding silica dust, shellac, or asphalt; fire-proof, by adding asbestos, powdered glass, or boric acid; washable, by adding casein or soda silicates; anti-corrosive, by adding resins and the like; anti-fouling, by introducing copper oxides or arsenical compounds for destroying marine organisms; luminous, by adding so-called phosphorescent substances, such as calcium tungstate. Paints containing no oil may be mixed with water, celluloid, cement, glue, spirit, or tar.

Enamel paints consist of pigments finely ground in resinous varnishes and turpentine. Gold paint and other glittering preparations are made with bronze powders and resinous varnishes; so-called silver paint often has an aluminium base.

Artists' colours do not contain white lead. They are put up in cakes or pastilles, which are ground and mixed on the palette, in metallic tubes, or in earthenware pans. Water-colours are mixed with gum-water, and when prepared moist they may contain glycerin or honey. For tempera the medium is gelatinous; for fresco, baryta-water or lime-water; for pastel, whitening, gypsum, or china. See Colour Mixing; Lake; Pigment; consult also Materials of the Painter's Craft in Europe and Egypt, A. P. Laurie, 1910; Painters' Colours, Oils and Varnishes, G. H. Hurst, 5th ed. 1913; Paints and Varnishes, A. S. Jennings, 1920.

Painted Lady (*Pyrausta cardui*). British butterfly of the family Nymphalidae. It has tawny-orange wings heavily blotched with black and spotted with white. The stout grey-green or blackish caterpillar is protected by short, branched spines; it feeds upon various plants, chiefly thistles. In some years it is exceedingly abundant, the excess above the normal being due to great

migrations, probably from N. Africa, whence they swarm to many parts of the world. See Butterfly, colour plate.

Painters' Colic. Severe form of colic occurring in the course of chronic lead poisoning (*q.v.*).

Painters' OR PAINTER-STAINERS' COMPANY, THE. London city livery company. In the 15th century a



Painters' Company arms

guild of S. Luke, it was granted charters in 1581 and 1685, and its minute books go back to 1683. Its freemen include Sir Peter Lely, Sir Godfrey Kneller, and Sir Joshua Reynolds. The original hall, bequeathed to the company by Sir John Browne, serjeant painter to Henry VIII, was rebuilt by Wren, 1668, and enlarged in 1880 and 1916. The doorway is attributed to Grinling Gibbons. Among the treasures of the company is a loving-cup presented by William Camden, in memory of his father, Sampson Camden, who was a liveryman. The hall is at 9, Little Trinity Lane, Upper Thames Street, E.C. See Some Account of the Painters, otherwise Painter-Stainers, J. G. Crace, 1880; The Worshipful Company of Painters, W. H. Pitman, 1906,

PAINTING AND PAINTERS

Haldane MacFall, Author of *A History of Painting*

This Encyclopedia contains biographies of all the world's great painters, e.g. Constable; Gainsborough; Raphael; Rembrandt; Titian; Turner; and includes some hundreds of illustrations of their works. See also Art; Drawing; Miniature

Painting, or rather the craft of painting, as we know it to-day, begins with the early Italians. From the ancients we have no masterpieces, though these must have been as astounding as their sculptures—the work of the mere journeymen painters in the Greco-Egyptian mummy-portraits of A.D. 200 suggests a wonderful achievement.

Prehistoric and antique painting were done with coloured earths. In Egypt painting was done with distemper (colour powders mixed with water and fixed with gum). The Greeks must have created great paintings which are wholly lost to us—they worked in distemper like the Egyptians; the Greeks took to filling in the outline with its own colour, creating the silhouette, generally black, as in their vases. The later Greco-Egyptian painting, which survived into the 2nd century after Christ, was wrought always either in distemper or in encaustic, which was

wax-painting with coloured powders mixed with white, and worked upon with hot tools.

In Italy painting was done in fresco on walls, and in tempera (egg-painting) on panels of wood, over which canvas had been pasted, and over this canvas a plaster ground had been laid. Tempera was colour powder mixed with egg. Fresco is water-colour on freshly laid plaster, but without a glue to hold it—the paint is driven over the newly-laid plaster, and becomes its surface as it dries—it cannot be retouched or altered. The outline was drawn, and the colours laid in flat coats. Such was painting when the Renaissance dawned in Italy.

These early painters step out of the medieval years, trying to illustrate the sacred teaching of the Church, so that the illiterate may read the book of life. It was all very naïve and primitive. Then came the eager desire to show objects in depth like low-relief sculpture, with

shading to give form; and the astounding genius of Masaccio brought forth the masterpiece of the Expulsion of Adam and Eve from Paradise, in which light and dark are massed. Then came Uccello (1397-1475) and others, "delirious with enthusiasm" over the creation of perspective. Then we find Mantegna creating the foreshortening of figures. Next a vogue for painting in grisaille or monochrome gave a marked impetus to the employment of light and shade (*chiaroscuro*). Masaccio's frescoes marked a prodigious advance in painting, and became the model for the giants of the Renaissance.

With the cast shadow began the painter's troubles—an enormous complexity was added to the craft of painting; for the early painters had simply concentrated on colour and line and form—which had all compelled fine draughtsmanship, and the rapidity of the drying of fresco, with the inability to correct or repaint, had increased that need for consummate draughtsmanship. Masaccio had brought out the relief of light and dark. Leonardo da Vinci advanced the craft and gamut of painting by seeking to show objects in the round through modelling by shading, and bathed in the atmosphere which surrounds them, abolishing the line for their edge—in other words, to show objects on the flat canvas or wall as if they were raised in relief—and he thundered against the old limitations of flat Italian painting.

Introduction of Oil-painting

Suddenly oil-painting comes into Italy over the Alps. The mixing of colours with oil had been attempted in antique days. In the 10th century Eracius, and in the 12th century Theophilus, describe its making; though Theophilus deplores the tediousness of having to let the first painting dry before you can paint over it as "too slow and wearisome." In the 14th century Cennino Cennini writes of painting in oil as in use among the Germans—he had heard of things beyond the Alps. As a matter of fact, the more moist air of the north made fresco useless, and oils inevitable.

Oil-painting came into Italy as coloured glazes to be painted over a painted tempera (egg painted) foundation until, so legend has it, Antonello da Messina brought oil-painting from the Van Eycks into practice. But in England, as far back as Edward I's day, we have in contracts charges for "coals to dry the oil-painting on the walls of the queen's bedchamber."

For a long time in Italy, down

to Perugino, transparent oil colour was used over a solidly painted tempera. Artists kept their "mysteries" very secret; and that of the Van Eycks died with them. But Pollaiuolo, Perugino, Verrocchio, Ghirlandajo, and da Vinci, all painted in oils; and in spite of Michelangelo's scorn and thunders against it as an art "fit only for women," its use rapidly increased. Oils could be retouched and alterations made with ease, giving this huge advantage over fresco which cannot. Oil-painting rapidly came into its own. But in Italy it was the Venetians, with their moist sea-climate, who adopted oils with enthusiasm, appreciating its more manageable handling and the prodigious advantage of being able to paint on canvas in their own studios. Tintoretto and Veronese were painting vast surfaces rid of the tedious business of having to lay fresh plaster for each day's work.

Flemish and Florentine Methods

Two craftsmanships in oils prevailed: the Flemish method—of a monochrome painting in brown and white on a white ground, over which the colour-scheme was painted in an even smooth *impasto*, solid layers of paint for the lights being laid over transparent "lay-in" for the darks to keep luminosity in the darks—was followed by the Florentines; the other method was to underpaint in a full solid *impasto* of oil-colours direct, and then to glaze over it with transparent oil-colours—this was the method of the Venetians, but too often on a dark red ground.

Rubens followed the Flemish tradition, but increased it, painting the darks very transparent, and then heavily loading the brush with solid paint for the lights.

The Florentine Italians fell into academic mimicry of their great dead after the passing of Michelangelo; and living art passed to Naples, where Caravaggio and the Spaniard Ribera were developing the vast increase of power to utter dramatic emotions, yielded by great shadows. These *Tenebrosi* painted solid, straight and direct on the canvas, without glazes—at "first stroke." This great advance went to Spain and Holland, and brought forth the mighty genius of Velazquez, Rembrandt, and Frans Hals. Titian and Tintoretto with them stood off the objects, figures, and landscapes, and saw them in the large—conflicting details depart, leaving the broad masses to impress the eye. Titian painted in tempera in solid monochrome of massed light and dark, then he painted his superb colour over all in oils. Velazquez painted "first

stroke," without glazes, employing light and shade in mass with astounding power. Frans Hals also so wrought. Rembrandt thrust the massing of light and shade still farther, and came to the revelation of character and to dramatic power in sublime fashion—he followed the method of solid direct painting, enhancing it with rich colour glazes.

Influence of Oils

Oils, allowing repainting and needing no tedious preparation, opened the gate for the painter to go direct to his inspiration and record it forthwith, as the Venetians and Dutch proved; and it was to give tongue to the greatest modern colour-song. Rubens, to a considerable extent, and Rembrandt, Frans Hals, and Velazquez, were at once intrigued with the "march of the brush," the handling of the loaded paint which showed the brush-marks.

Painting in France arose in academic mimicry of the Flemings, and was soon aping the Italians, but the portrait-painters saved it. Nicolas Largillière (1656-1746) headed the revolution, keenly interested in "values," the change of tone that comes to the colour of objects due to the distance whereby they become bathed in volume of atmosphere. And with the Frenchman's innate love of craftsmanship there rapidly arose an intense interest in the handling of the paint itself, and "the agility of the brush" became the aim of the fine 18th century outburst into national colour-song. The glamour of the brush-stroke became a delirium with Watteau, Chardin, Boucher, and Fragonard. Chardin, turning to pastels, and at once robbed of his glowing glazes, gets tone by breaking up the tone and setting the strokes of its primary colours side by side to create it—he "breaks colour"—and thereby becomes forerunner of the next great advance in the range of painting to utter the emotions whereby Turner bursts into "colour-orchestration."

In England, Hogarth had brushed aside the "black old masters" and painted the life of the day as he saw it; while the fine portrait-painters, headed by Reynolds, were trying to rediscover the magic of the great dead, when Turner arose. Turner set up as his standard of painting each of the supreme masters in turn, and beat them. Yet, majestic as was his achievement, he could not utter the sunlight, and the play of light on objects that gives them their whole significance to the eye. He flung aside all tradition, which had

PAINTING: PRINCIPAL SCHOOLS, DATES, AND ARTISTS

| SCHOOL AND DATE | SUBDIVISIONS | ARTISTS |
|----------------------------------|--|--|
| ITALIAN 12th to 18th century | <i>Byzantine School, 9th to 12th century</i> <i>Siena, 14th century</i> <i>Florence, 14th to 15th century</i> <i>Venice, 15th to 18th century</i> <i>Milan, 15th century</i> <i>Rome, 15th to 18th century</i> <i>Naples, 16th century</i> <i>Bologna, 16th to 18th century</i> <i>Padua, 14th to 15th century</i> <i>Genoa, 15th to 17th century</i> <i>Ferrara, 15th to 17th century</i> <i>Parma, 15th to 16th century</i> | Margaritone, Cimabue Duccio Giotto, Fra Angelico, Filippo Lippi, Filippino Lippi, Sandro Botticelli, Paolo Uccello, Masaccio, Michelangelo Carpaccio, the Bellini, Titian, Giorgione, Tintoretto, Paolo Veronese, Guardi, Canaletto, Tiepolo Leonardo da Vinci, Bernardino Luini Raphael, Perugino, Giulio Romano Salvator Rosa, Caravaggio Francia, the Caracci, Guido Reni Squarcione, Andrea Mantegna Giovanni Battista Paggi, Bernardo Strozzi Dosso Dossi, Lorenzo Costa Correggio (Antonio Allegri) |
| FRENCH 15th to 20th century | <i>Classic School, 17th to 19th century</i> <i>Louis Quinze and Louis Seize, 18th century</i> <i>Romantic School, including Fontainebleau Group, 19th century</i> <i>Realistic School, 19th century</i> <i>Impressionist School, 19th century</i> <i>Post-Impressionist School</i> | Claude Lorrain (Gellée), Nicholas Poussin, J. L. David, J. A. D. Ingres, Puvion de Chavannes Antoine Watteau, J. H. Fragonard, F. Boucher, J. B. Greuze, J. S. Chardin T. Géricault, E. Delacroix, J. F. Millet, C. Corot, N. V. Diaz, T. Rousseau, A. Monticelli G. Curbet, J. Bastien Lepage, Benjamin Constant, L. Bonnat, Carolus Duran E. Manet, C. Monet, H. G. E. Degas, A. Sisley, F. A. Renoir, Berthe Morisot Paul Cézanne, Henri Matisse |
| GERMAN 14th to 17th century | <i>Cologne, 14th to 15th century</i> <i>School of Swabia (Culmburg, Ulm, Augsburg), 15th to 16th century</i> <i>Nuremberg, 15th to 16th century</i> | Meister Wilhelm, Stephan Lochner Martin Schongauer, Hans Holbein the Elder, Hans Holbein the Younger Albrecht Dürer |
| SPANISH | <i>Madrid, 16th to 19th century</i> <i>Seville, 16th to 18th century</i> | El Greco, Diego Velazquez, J. B. del Mazo, J. de Pareja, J. Carreño, Claudio Coello, F. Goya, M. Fortuny A. Fernandez, L. de Vargas, F. de Herrera, Alonso Cano, F. de Zurbaran B. E. Murillo, Valdes Leal |
| DUTCH 17th century | <i>The "Little Masters," 17th century</i> | Rembrandt van Rijn, J. van Goyen, Meindert Hobbema, J. van Ruysdael, P. Potter, A. van der Velde, A. Cuyp, F. Hals G. Dou, J. Vermeer of Delft, Pieter de Hooch, G. Terburg, Jan Steen, Adriaen Brouwer |
| FLEMISH 14th to 17th century | | Hubert and Jan van Eyck, Hans Memling, Roger van der Weyden, Quinten Massys, J. Mabuse, Peter Paul Rubens, Antony Van Dyck |
| ENGLISH 17th to 20th century | <i>17th century Portraitists</i> <i>18th century Portraitists</i> <i>Subject and Landscape Painters, 18th to 19th century</i> <i>Pre-Raphaelite School, 1848-c.1900</i> <i>Modern Painters</i> | Sir Peter Lely, Sir Godfrey Kneller Sir J. Reynolds, T. Gainsborough, G. Romney, Sir T. Lawrence T. Hogarth, G. Morland, J. Crome, W. M. Turner, J. Constable, J. S. Cotman, G. F. Watts, Sir J. Millais, Lord Leighton W. Holman Hunt, D. G. Rossetti, Sir E. Burne-Jones J. Whistler, J. S. Sargent, F. Brangwyn, Augustus John |
| SCOTTISH 18th to 20th century | <i>Portraitists and Subject Painters, 18th and 19th centuries</i> <i>Landscape Painters, 19th century</i> <i>Modern Painters</i> | Sir Henry Raeburn, Sir D. Wilkie, Sir W. Q. Orchardson, J. Pettie W. McTaggart Sir J. Guthrie, Sir J. Lavery, George Henry |

failed him, and burst into colour-orchestration by breaking his colour, and making colour utter the mood of the thing desired; and in the doing he increased the wide gamut of painting to utter the emotions to its supreme capacity.

Constable, going back direct to nature, and deeply moved by Turner, brought back French painting to life; and out of him was born the great Romantic School—Corot, Daubigny, Millet, Rousseau. England turned back from Turner to the primitive-academism of the pre-Raphaelites, but the revelation of Turner went to France and gave birth to the broken-colour impressionism of Claude Monet, Degas, Monticelli, and the rest. Their comrade Manet had taken up mass-impressionism where Velazquez and Frans Hals had laid it down, and he added broken-colour to it. His disciple Whistler brought it to England; and later Sargent.

Besides fresco, distemper (gum-painting), tempera (egg-painting), oil-painting, encaustic (wax-painting), and pastels, water-colour has also gone through many phases and varied handling, but all are variants of its two essential methods: either the pure transparent use of fluid colour relying on the white ground for the lights; or "gouache," which is water-colour mixed with Chinese white and used solid like oils.

A most important part of painting is the use of a palette of colours which are permanent in themselves, and have no evil effect upon nor are themselves evilly affected by the others used with them.

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Pair of Spectacles. A Fantastic comedy founded by Sydney Grundy on Les Petits Oiseaux of Labiche and Delacour. It was produced, Feb. 22, 1890, at the Garrick Theatre, London, where it attained a run of 335 performances. The story tells how the trusting and unsuspecting Benjamin Goldfinch, by losing his own spectacles and borrowing those of his brother Gregory, a hard suspicious man, borrows also for a time his brother's character. John Hare played Benjamin Goldfinch and Charles Groves Gregory Goldfinch.

Paisiello, GIOVANNI (1741-1816). Italian composer. Born at Taranto, May 9, 1741, he studied at Naples and there began to compose. From 1776-84 he was in the service of Catherine of Russia, after which he returned to Naples, where for 12 years he was master of music to Ferdinand IV. He died at Naples, June 5, 1816. Paisiello's operas, included *The Barber of Seville*, and he composed church music.

Paisley. Mun. burgh, river port and market town of Renfrewshire, Scotland. It stands on the White



Paisley arms

Cart, near its union with the Clyde, and is served by the Cal. and G. & S.W. Ry., being 7 m. from Glasgow. The old town is on the

W. side of the river and the new town on the E. The parish church was formerly the nave of the church of the abbey; it was restored about 1860 and has a beautiful W. front. Other remains of the abbey include a chapel which contains tombs of some of the Stewarts, and the transepts. In 1888 Queen Victoria erected a monument to the Stewarts over the spot where Robert III was buried. Other buildings include the town hall, municipal buildings, county buildings, and a free library and museum. There are two infirmaries and other institutions for the sick and disabled. Several of them were gifts from members of the Coats and Clark families. A handsome edifice is the Coats memorial church, belonging to the Baptists. There is a grammar school of 1576 and a technical school. The town has several parks, one of them, St. James's, having a racecourse and an observatory.

The chief industry is the manufacture of thread, here being the large mills of the firm of Coats. Other manufactures include dyeing, bleaching, distilling, and the

making of carpets, chemicals, starch, soap, preserves, etc. Ship-building is carried on and there are engineering works. There is a harbour, and owing to the deepening of the river in 1894 large vessels can reach the town.

Originally called Passeleth, Paisley grew up around an abbey founded about 1160. With its extensive lands it was given to a layman at the Reformation. In 1488 it was made a burgh. About 1700 it began to be a manufacturing centre, the famous shawls being made here; but it was the introduction of the cotton thread industry about 1810 that laid the foundation of its modern prosperity. It is now governed by a burgh council on modern lines, and sends one member to Parliament. Market days, Mon. and Thurs. Pop. (1921) 84,837. See *History of Paisley*, W. M. Metcalfe, 1909.

Paithan. Town of Hyderabad, India, in Aurangabad dist. It stands on the Godavari, 30 m. S. of Aurangabad. One of the oldest cities of the Deccan, it formerly had a great reputation for the excellence of its silk goods. The present town covers but a small portion of the ancient city site. Pop. 7,000.

Pakenham, SIR WILLIAM CHRISTOPHER (b. 1861). British sailor. Born July 10, 1861, he entered the navy in 1874.

He served with the Japanese fleet during the Russo-Japanese War, and was fourth sea lord, 1911-13. In 1914 he became rear-admiral. On the outbreak of the Great War he commanded the third cruiser squadron, and the second battle-cruiser squadron at Jutland, succeeding Sir David Beatty as commander-in-chief of



Sir W. C. Pakenham.
British sailor
Russell

the battle-cruiser force, Nov. 29, 1916. In 1919-20 he was president of the R.N. College, Greenwich, and from 1920 to 1922 was commander-in-chief, N. America and W. Indies. He was knighted in 1916 and promoted admiral in 1922. See *Accolade*.

Pakhoi. Treaty port in Kwangtung prov., China, at the head of the Gulf of Tong-king. Opened to foreign trade in 1877, its importance has been considerably diminished by the opening of W. River ports and the development of Tong-king and Kwangchow Wan. Manganese ore is worked in the neighbourhood. Pop. 20,000.

Pakington, SIR JOHN (d. 1560). English lawyer. A member of a Worcestershire family, he obtained an official position in the courts of law in 1509. He became, too, a favourite with Henry VIII, rose to be a judge, and secured a good deal of property. His heir was his grand-nephew, Sir John Pakington (1549-1625), an Elizabethan courtier, whose son was made a baronet in 1620. The baronetcy was held by the Pakingtons until the death of the 8th baronet in 1830. John Somerset Russell, the heir of the Pakingtons, took their name and was made a baronet in 1846. He was an M.P. from 1837 to 1874, and as a Tory was a cabinet minister in the governments of 1852, 1858-59, and 1866-67. In 1874 he was made Baron Hampton, a title still held by the Pakingtons.

Pakokku. Dist. and town of Upper Burma, in the Magwe div. The dist. lies N. of Minbu, W. of the Irawadi. Oil seeds, pulses, and a little rice are grown. The Yen-angyat oil fields yield petroleum. The town is on the right bank of the Irawadi, below the Chindwin confluence, and is the centre for the timber trade in logs floated down this tributary; there is some boat-building. Area, 6,210 sq. m. Pop., dist., 410,000; town, 20,000.

Pala. S. African antelope, also known as the impala (*q.v.*).



Paisley, Scotland. Left, the abbey church; right, town hall, the gift of G. A. Clark, built in 1887

Palace of Peace. Building between The Hague and Scheveningen, designed to house the permanent court of arbitration created by the peace conference of 1899. In 1903 an endowment of £300,000 for its erection was made by Andrew Carnegie (*q.v.*), and the building, designed by the French architect, L. M. Cordonnier, was begun in 1907 and inaugurated on Aug. 28, 1913, by the queen of the Netherlands in the presence of the representatives of 42 states. Its grounds cover 16 acres, and the building, in brick and stone in the Flemish-Dutch style, is about 260 ft. square. *See* Hague, The.

Palace Theatre. London place of entertainment. Situated in Cambridge Circus, it was designed



Palace Theatre, London. Main part in Cambridge Circus

by T. E. Colcutt and opened in Jan., 1891, as the Royal English Opera House with the first production of Sullivan's *Ivanhoe*. In the same year Sarah Bernhardt gave a season here. The interior of the building was then altered, and it was reopened in 1892 as the Palace Theatre of Varieties.

Palace Yard, New. Railed-in space at Westminster, N. of Westminster Hall, now the members' entrance to the British House of Commons. It was one of the two courtyards of the old palace after which it was named. Facing the hall once stood a clock tower, the bell of which, Great Tom, was bought for St. Paul's Cathedral, but was recast in consequence of being cracked while passing through Temple Bar; and a fountain that on great occasions is said to have run with wine.

Palace Yard, Old. Open space between the British Houses of Parliament and Henry VII's chapel. Here Guy Fawkes and Raleigh were executed and Prynne was pilloried. Chaucer and Ben Jonson are believed to have lived in houses that once stood near. The statue of Richard Coeur de Lion by Maro-

chetti was erected in 1860. The peers' and visitors' entrances to the Houses of Parliament are in Old Palace Yard. *See* Westminster.

Palacio Valdes, ARMANDO (b. 1853). Spanish novelist. He was born at Entralgo, in Asturias, Oct. 4, 1853, and became editor of the *Revista Europea*, in which his first essays appeared. His first novel, *El Señorito Octavio*, 1881, was followed by *Marta y Maria*, 1883, and by others, of which the most notable were *Riverita*, 1886; *El Cuarto Poder* (The Fourth Power, a novel of journalistic life), 1888; *La Hermana San Sulpicio*, 1889; and *La Espuma* (Froth), 1892. He is a lover of nature, delighting in his Asturian mts. and sympathetic with the working people, but can portray, as in *Froth*, the frivolity and luxury of Madrid society with great fidelity and keen satire.



A. Palacio Valdes, Spanish novelist

Palacky, FRANZ (1798-1876). Bohemian historian. Born in Moravia, June 14, 1798, he was the son of a schoolmaster and a Protestant. Educated at Pressburg, he himself became a schoolmaster, but his interest in the history and literature of the Czechs led him to devote himself to a literary career. He edited a Journal, became historiographer of Bohemia, and had a good deal to do with arousing interest in the past of his own people. His fame rests on his *History of the Bohemian People*, in 5 vols., which he began to issue

in 1836, afterwards producing a revised edition. Palacky took part in the political events of 1848, and was afterwards the leader of the party in the Bohemian legislature that favoured a union of the Czechs into a kingdom. He sat for a time in the senate of Austria. He died May 26, 1876. *Pron.* Palatsky.

Paladin (Lat. *palatinus*, belonging to a palace). Word, a variant of palatine, meaning a courtier or member of the royal household. It is known, however, especially because it was used for the 12 legendary figures—peers, as they are called—who are supposed to have gone with Charlemagne to Spain. Owing to the glamour that surrounded them the word was afterwards used for a knight of exceptional gallantry. *See* Palatine; Roland.

Palaebotany (Gr. *palaaios*, ancient; *botanē*, plant). Study of the plants of former ages. After the publication of *The Origin of Species* in 1859, the investigation of the remains of extinct animals and plants assumed a new significance. The plants of to-day are presumably the descendants of ancestors which lived in an earlier period of the earth's history, and were themselves descended from still older types.

The vegetation of which we know most is that of the coal period. Palaebotanical research has revealed the existence in the



Palace Yard, Westminster. The Old Yard, looking towards St. Stephen's Hall, with peers' entrance on right. Top, right, New Palace Yard, and members' entrance to the House of Commons

forests of the coal-period of genera exhibiting a combination of characters, which are now distributed among different families or groups. These extinct generalised types demonstrate a close affinity between certain groups, which in their modern representatives afford little indication of relationship.

The oldest rocks in the earth's crust contain no fossil plants, but their absence does not necessarily mean that there was no vegetation when the strata were in process of formation; it is more probable that both animals and plants existed, but such remains as were entombed in the oldest sedimentary rocks have been rendered unrecognizable, or completely destroyed in the course of the repeated foldings of the earth's crust. The most ancient undoubted plants so far discovered are more highly organized than one would expect of members of a primitive flora; their advanced stage of differentiation suggests that they were preceded by earlier phases of plant evolution.

There were no flowering plants in the forests of the carboniferous epoch, but many of the trees were members of the class Pteridophyta, which includes the ferns, club mosses (*Lycopodium*), and other genera, horsetails (*Equisetum*), and other types. Many of these plants had the dimensions of fairly large trees, and differed considerably both in size and their greater complexity of structure from their relatively small and herbaceous descendants at the present day. There were also many plants in the coal-period, which in some respects presented a close resemblance to some existing ferns, but differed from them in certain characters, and, more especially, in the production of true seeds; these genera are included in the class Pteridosperms instituted for palaeozoic fern-like plants bearing seeds. The Pteridosperms are of special interest, because the production of seeds is now the monopoly of plants higher in the scale than the ferns and their allies. See Botany.

Palaeogene Deposits. In geology, name given to deposits of the Older Tertiary epoch. See Tertiary.

Palaeography (Gr. *palaaios*, ancient; *graphein*, to write). Study of ancient handwriting. It concentrates upon the forms of writing in inscriptions on plant materials, such as papyrus, vellum, and paper. That branch of it which concerns inscriptions on hard materials, such as stone, metal, and wood, is called epigraphy. In the case of undated MSS., palaeography is often able to decide problems of date by considerations of style. It is also of decisive importance in determining the genuineness of documents.

Ancient MSS., mostly in the form of rolls, tablets, or books, sometimes occur on leaves, bark, linen, potsherds, and wood boards. The writing implements were

pointed, split, or frayed reeds, stiles and quills, the hairbrush being of Chinese invention. The scripts tend to become running or cursive hands, as distinct from the stiffer and more formal characters demanded by the art of stone-chiselling. Hence the hieroglyphic characters of Egyptian stone inscriptions passed, even in the 1st dynasty, into hieratic, and in the XXVIth dynasty into demotic.

Greek palaeography is traceable through numerous examples, especially on papyrus and vellum, from the 4th century B.C. down to the introduction of printing into Europe. Beginning with uncial or capital letters, it passed into minuscule or small-hand. Of this two styles were in use: book-hand, which displaced papyrus by vellum in the 4th century of our era, and non-literary cursive, which was employed for the ordinary business of life. Slavonic hands descend from 9th century Greek forms.

Latin palaeography is of wider importance, because it deals, not only with Roman scripts, uncial and minuscule, but also with those national hands which grew out of them in every part of Europe. By 800 there emerged the Carolingian hand, greatly influenced by Alcuin of York's youthful familiarity with English writing. This became the standard calligraphy of W. Europe, as distinct from the rugged Germanic black letter, until the dissemination of the Italian hand during the Renaissance. The non-literary cursive and the court-hands, which developed side by side with the book-hands, are the precursors of the various modern systems of calligraphy, which in their turn are being affected by the growing use of the typewriting machine.

The methods of European palaeography have been utilised for the study of non-European handwritings. Among these the most important are Hebrew, Syriac, Coptic, Arabic, Persian, Indian, Pali, and Chinese. See Anglo-Saxon Chronicle; Bible; Codex; Graffiti; Ostraca; Uncial; Writing; consult also An Introduction to Greek and Latin Palaeography, E. M. Thompson, 1912; History of the Art of Writing, W. A. Mason, 1921.

Palaeolith (Gr. *palaaios*, ancient; *lithos*, stone). Stone implement or weapon of the early Stone Age. Intermediate in workmanship between eoliths and neoliths, they were produced by chipping and flaking flints and other hard stones. Unpolished products were used as hand-axes, hammers, scrapers, borers, cutting tools, javelin heads and saws. See Flint Implements.

Palaeolithic. Term introduced by Sir John Lubbock, afterwards Lord Avebury, to denote the older phase of the prehistoric stone-age civilization which preceded the use of metals. This phase was itself preceded by the eolithic, characterised by the production of still cruder stone implements called eoliths, and was followed by the neolithic age.

In prehistoric Europe and N. Africa evidence drawn from the development of style, the relative position of stratified remains, and their association with the bones of extinct animals, has enabled the palaeolithic age to be divided into six consecutive periods; Lower: Chellian, Acheulian, Mousterian; Upper: Aurignacian, Solutrian, Magdalenian. Each is marked by characteristic types of flint working, and by an advancing growth of material achievement, fine art, and social organization.

The palaeolithic culture began to be disseminated to other parts of the world before the neolithic phase was reached, and remnants of it still survived in recent times at the farthest land extremities of the earth, as in Tasmania, S. Africa, and Tierra del Fuego. See Anthropology; Art; Prehistoric and Primitive; Man; Stone Age.

Palaeologus. Name of a Byzantine family, which founded the last dynasty of East Roman emperors, lasting from 1261 to 1453. Michael VIII (1261-82), emperor of Nicaea, overthrew the Latin empire, and recovered Constantinople from Baldwin II. A successful soldier and administrator, he in vain endeavoured to heal the schism between the Eastern and Western Churches. He was succeeded by Andronicus II and III (q.v.). John V (1341-91), who until 1355 had to acknowledge John Cantacuzene (q.v.) as emperor, was afterwards dependent upon the sultan of Turkey for his position. Manuel II (1391-1425), immediately after his accession, became engaged in hostilities against the Turks. Alarmed for the safety of Constantinople, which was being besieged by Bayazid, Manuel sought the aid of Western Christendom. In response to his appeal, an army commanded by the Roman emperor Sigismund set out to help him, but Bayazid gained an overwhelming victory at Nicopolis in 1396. Manuel then came to terms, but the capital was in constant peril until the defeat of Bayazid at Angora in 1402. From that time during the reign of Mohammed I, the son of Bayazid, Manuel was at peace. On the accession of Murad II, Constantinople was again be-

sieged, and Manuel, forced to agree to a humiliating treaty, retired to a convent, where he occupied himself with the composition of theological works. John VIII (1425-48), to stem the threatened advance of the Turks, endeavoured to obtain help from the West by renewing the attempt to heal the ecclesiastical schism. An agreement was actually concluded in 1438, but was rendered useless by the opposition of the Greek clergy and the people of Constantinople. The last representative of the family was Constantine Palaeologus (*q.v.*), with whom the East Roman empire came to an end in 1453.

Palaeontology (Gr. *palaios*, ancient; *onta*, beings; *logos*, science). Study of past life on the globe, especially as revealed by fossil remains. The term embraces the study of fossil plants, palaeobotany (*q.v.*), as well as of fossil animals, palaeozoology, but is often used of the latter alone. The description of the fossil organisms themselves is called palaeontography.

Palaeontology subserves the invaluable purpose of establishing the relationship in time of the stratified rocks. The documentary evidence furnished by fossils shows that the earth's crust has passed through three great time-divisions or eras, called palaeozoic, mesozoic, and cainozoic, to denote ancient, middle, and recent life respectively.

The fossil remains are imperfect in themselves, and also comprise a mere fraction of the total life of the past. The soft parts which every organism possesses have disappeared, except in the case of flies entombed in amber; hence infusoria and other soft-bodied creatures are absent from the fossil record. Sometimes animals leave nothing more tangible than a footprint, a burrow, or a streak. Fossils comprise or represent mainly such hard parts as teeth, bones, and shells, sometimes in their original substance, although deprived of fatty matters, colours, and the like, sometimes petrified or mineralised in ways that perpetuate the actual form.

Even hard parts disappeared unless animals died under conditions ensuring some form of natural burial. Many forms would have passed into oblivion but for stray specimens carried down by rivers and dropped into the silt at their mouths. Hence the biological groups most useful for timing the procession of life are those whose habitat was the shallow seas, especially brachiopods or lampshells, trilobites, graptolites, corals, molluscs, and other fishes. Palaeon-

tology confirms the uniformity of Nature's methods in adapting her living handiwork to its environment. The law of analogous adaptation denotes a tendency for different groups of creatures to vary in a similar way. The reptilian iguanodon of Maidstone walked on the hind legs, aided by the tail, much as the kangaroo afterwards did. The Tasmanian marsupial, *Nototherium*, as shown by remains found in 1920, anticipated the shape and habits of the rhinoceros. Every age produced creatures which sought self-protection by means of sheer physical mass. Scotland's Old Red Sandstone preserves the sea-scorpion *Pterygotus*, with a length of 6 ft. Primitive fishes, *Asterolepis* and *Dinichthys*, reached 20 ft. A shark, *Carcharodon*, which infested the pliocene waters of Felixstowe, may have been 100 ft. long. The mesozoic era, the age of reptiles, produced the most stupendous animals that ever lived.

Important contributions to other branches of knowledge result from this study.

(1) It has supported with overwhelming evidence the view propounded by Darwin that the history of life is one of orderly development. Life cannot be traced to its first beginnings, and many of the links connecting species with species, or class with class, are missing. But some remain, such as *Archaeopteryx*, which helps to explain how reptiles developed into birds.

(2) The geographical distribution of animals and plants is the result of migrations, often in remote geological time. The presence of opossums in South America, all other pouched mammals being confined to the Australasian region, becomes intelligible when it is shown that marsupials originated in Europe, whence they spread to mesozoic America, probably reaching Australia over an Antarctic land-bridge. The lemurs of Madagascar are explained by an eocene land-bridge which connected the island either with Africa or India.

(3) The study of fossil forms throws light upon the changes from epoch to epoch in the relation of land to water, variations of climate and rainfall, and the like. The presence of the hippopotamus in pliocene East Anglia betokens a tropical temperature; that of the woolly rhinoceros in the Thames valley later on proves sub-arctic conditions. Fresh-water organisms have enabled vanished lakes and rivers to be mapped, while marine faunas in overlying beds point to forgotten seas.

(4) Lastly, palaeontology has yielded interesting evidence concerning the physical history of man. The fossil bones of primeval man and his forerunners are casual and scanty. But when associated with those of mammals long extinct they enable valuable conclusions to be drawn, not only concerning the high antiquity of the human race, but also concerning the environment in which man wrought out to a final issue the age-long struggle for the primacy of the world. See *Archaeopteryx*; *Dinosaur*; *Fossils*; *Geology*; consult also *Text-book of Palaeontology*, K. A. von Zittel and C. R. Eastman, vol. 1, 2nd ed. 1913, vol. 2, 1902; *The Age of Mammals*, H. F. Osborn, 1910; *Invertebrate Palaeontology*, H. L. Hawkins, 1920; *An Introduction to P.*, A. M. Davies, 1920.

E. G. Harmer

Palaeozoic. In geology, the name given to the earlier fossiliferous geological systems from the Cambrian to the Permian. The term includes the Cambrian, Ordovician or Lower Silurian, the Silurian, Devonian, Carboniferous, and Permian periods, and rocks of these periods contain fossils of the earliest known forms of life. See *Cainozoic*; *Mesozoic*.

Palaephatus. Greek writer, under whose name is preserved a small work entitled *Concerning Incredible Things*. It contains a collection of myths, accompanied by allegorical interpretations. He is supposed to have been a native of Egypt or Athens, and to have lived in the 3rd century B.C. He has also been identified with Palaephatus of Abydos, a friend of Aristotle and the author of several historical works. The work was at one time a favourite schoolbook.

Palaestra (Gr. *palaistra*, wrestling school). Word used in various senses: (1) A place where Greek boys were taught gymnastic exercises; (2) part of the gymnasium reserved for wrestling bouts; (3) later, the gymnasium itself.

Palagonite. In geology, a dark red igneous rock. It is the weathered form of black, glassy, cinder-like masses which have been ejected from volcanoes, and generally appears in thin layers between basaltic lavas. It is found in Iceland, Sicily, etc., and often among the red clays on the bottom of the sea, either as a result of submarine volcanic activity or from ashes of terrestrial volcanoes, which have floated out on the ocean and been deposited.

Palais de Justice. French term for a building used as a court of law. Many French and Belgian towns have buildings of this kind,

some being very fine edifices. The palais de justice in Paris is a huge pile on the Île de la Cité. It is mostly modern, but the block contains the Sainte Chapelle and other medieval erections.

Another notable palais de justice is the one at Brussels. It was built to celebrate the 50th anniversary of Belgium's existence as a separate kingdom. Designed by Jacques Poelaert, it was begun in 1866 and opened in 1883. The central feature is the dome that crowns this pyramidal structure; but the architectural detail of the main front consists of purely classic forms, with an adroit admixture of Assyrian or Egyptian. See Brussels; Law Courts.

Palais Royal. Palace in Paris. It was designed by Jacques Lemercier for Cardinal Richelieu. The original building, begun in 1629, consisted of an entrance front, with a courtyard enclosed by buildings behind it, continued in a main court, with gardens, now public, at the rear. During Richelieu's life it was known as the Palais Cardinal. The palace suffered from restoration, and in 1871 part of it was destroyed. It was subsequently the home of the Orléans family, and later housed the Conseil d'État.



Palais Royal, Paris. The main building of the old Palais Royal, now occupied by, and called, the Conseil d'État

Palamedes. In Greek legend, a hero who fought on the Greek side in the Trojan War, noted for his sagacity and inventiveness. He is not mentioned in Homer. Hated by Odysseus, he was put to death on a trumped-up charge of treachery. *Pron.* Pallam-mee-deez.

Palamkotta, PALAMCOTTAH or PALAYAM-KOTTAL. Town of Madras Presidency, India, in Tinnevely dist. An inland town, it is the dist. headquarters, an important road junction, and on the rly. line from Tuticorin and Madras to Travancore. Pop. 44,900.

Palanpur. Native state and town of India, in Gujarat, Bombay prov. The state lies between Baroda and Rajputana, and is crossed by the rly. from Mehsana, Baroda, to Ajmer-Merwara. Wheat, rice, and sugar-cane are



Palanquin of the type in common use in China

grown. The town, 83 m. N. of Ahmadabad, is the headquarters of the Palanpur agency, and is a rly. junction for the branch line to Deesa. Its area is 3,150 sq. m. Pop., state, 470,000; town, 17,200.

Palanquin or **PALKI** (Skt. *paryanka*, a bed). Eastern conveyance for one person, in the form of a litter, borne on the shoulders of two, or more generally four men, by means of poles passed through rings at each end.

pointed structure, the uvula, which hangs downwards and can be seen at the back. The soft palate shuts off the pharynx from the cavity of the mouth. During the act of swallowing food or of coughing, the soft palate is drawn up so as to cover the entrance of the nasal cavity. See Anatomy; Cleft Palate; Mouth.

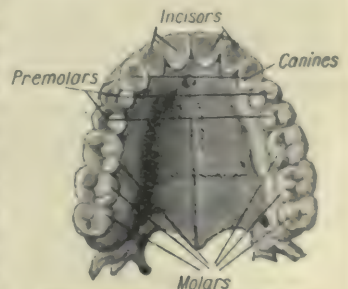
Palatinate (Ger. *Pfalz*). Name given to the district in Germany ruled by the count palatine of the Rhine. It lay on both sides of that river, about midway between its source and its mouth, and its capitals were Heidelberg and later Mannheim. It obtained a separate existence in the 10th or 11th century. In 1214 the Palatinate passed into the possession of the Wittelsbachs, the family ruling over Bavaria, and for some years the two countries were united. In 1255 they were separated, and the Palatinate had a ruler of its own. In 1329, by treaty, the elector palatine obtained a piece of N. Bavaria to add to his lands; henceforward this was called the Upper, and his older possession the Lower or Rhenish Palatinate.

The elector palatine Frederick V, the son-in-law of James I of Great Britain, was the unfortunate

Originally open, it is now an enclosed box, with sliding panels or latticed shutters.

Palār. River of Mysore and Madras, India. It rises in Mysore, cuts through the E. Ghats and reaches the Bay of Bengal, 50 m. S. of Madras city. Usually the whole of the water is utilised for irrigation, and none flows to the sea. It supplies water to the Kolar goldfields. The chief engineering work is the ancient or dam at Arcot. Its length is 230 m.

Palate. Roof of the mouth, separating the cavity of the nose from the mouth. It consists of the hard palate in front, formed mainly by the two palate bones, and the soft palate behind, consisting of muscular tissues between two layers of mucous membrane. It is prolonged into a



Palate. Diagram indicating relative positions of the teeth and the palate bones



Top, reconstruction made by the archaeologist Gatteschi of part of the Via Sacra or Sacred Way, viewed from the foot of the Esquiline Hill. In the distance is seen the Palatine Hill, crowned with the palaces of the Caesars. In the left foreground is the portico of the Temple of Venus and Roma; beyond it stands the

Arch of Titus; on the right are dwellings and shops in the busy thoroughfare. The Sacred Way entered beneath the Arch of Titus, passed in front of the Temple of Venus and Roma, and bore round, as seen in the right foreground of the top illustration, to the Forum. The lower picture shows the same spot as it now appears, only the Arch of Titus remaining erect

PALATINE HILL: IN THE TIME OF IMPERIAL ROME AND AT THE PRESENT DAY

prince whose election to the throne of Bohemia led to the outbreak of the Thirty Years' War.

In 1777 the family ruling over Bavaria became extinct, and consequently its kinsman, the Elector Palatine, Charles Theodore, became also elector of Bavaria. Henceforward, Munich was his capital and the Palatinate was merely part of Bavaria. In 1802 Bavaria was forced to give up certain parts of the Rhenish Palatinate to France, Baden, and Hesse, but some of this was regained at the settlement of 1815. Heidelberg, however, still remains in the possession of Baden.

The two Palatinates are now provinces of Bavaria. The Rhenish Palatinate lies on the W. side of the Rhine and detached from the rest of the republic. Its area is about 2,300 sq. m.; its pop. 937,000; and its capital is Spire. In 1923-4 the Rhenish Palatinate was brought into prominence by a separatist movement aimed at creating an autonomous state. Disturbances took place and public buildings were seized. The Upper Palatinate is in N.E. Bavaria, with an area of 3,730 sq. m. and a pop. of 600,000. The capital is Nuremberg.

Palatine (Lat. *palatium*, a palace). Literally, someone belonging to the palace, and therefore a servant of the ruler. In the Roman Empire it was given to certain officials sent out by the emperors to discharge special duties, and this use passed into France and Germany, where counts palatine appeared about the 8th century. These men had special powers, due to the fact that they were more directly the representatives of the sovereign than were the ordinary counts. The districts over which they ruled were called palatinates. The most important of them was the one that grew into the Palatinate of the Rhine.

The word, used in practically the same sense, passed into England soon after the Norman Conquest. The earls of certain counties, generally those on the borders, such as Durham and Cheshire, were given special privileges, and these were known as counties palatine. Other counties palatine were Lancashire, given the privilege in the 14th century, Shropshire, Pembrokehire, and Kent. Durham, Cheshire, and Lancashire were, however, the only ones that retained their special privileges for any length of time, and traces thereof still remain.

Palatine Hill (anc. *Mons Palatinus*). One of the seven hills of Rome. The name is derived from Pales, the goddess of shepherds, who was worshipped here. Originally it comprised two summits, 168 ft. and 165 ft., separated by a saddle, but during the development of the city the shape has been modified. It was the site of Roma Quadrata, the "square" town, so called from the shape of the Palatine, which contained the fig-tree and thatched hut of Romulus. Parts of the walls are still to be seen. When other hills were included, Roma Quadrata developed into the Septimontium, or circuit of the seven hills. In republican times the hill was a residential quarter; Augustus and Tiberius had palaces there, and Nero's Golden House extended from the Palatine to the Esquiline. Slight excavations were made in the 16th century; many works of art were laid bare and carried off to other Italian cities from the central area in 1721-30. Systematic excavation has been continued by the Italian government since 1870. See Rome.

Palaung. Burmese name for aboriginal tribes of Mon-Khmer speech in upper Burma. Calling themselves Ta'ang, numbering (1911) 144,139, and allied to the Wa, they are hill-dwellers, mostly in Tawngpeng, Mongmit, and other Shan states, as well as the E. of the Ruby Mines dist. They were driven out of the Irawadi and Mekong headwaters in recent times by Shan and Kachin pressure. Outside their chief settlements they are usually called Palés.

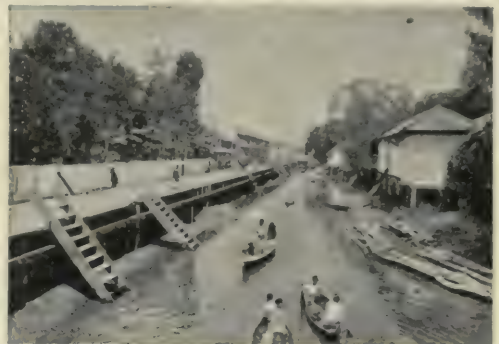
Palazzolo Acreide. Town of Italy, in Syracuse prov., S.E. Sicily. It is 27 m. W. of Syracuse city on the main road to Palermo. An ancient town founded by Greeks from Syracuse as Acreia in 664 B.C., it was later known as Placeolum, Balensul, and El-Akrat. Tombs of all periods, a small theatre of late Greek origin, and a temple of the dead occupy the old acropolis. Pop. 15,000.

Pale. In heraldry, a broad band, placed vertically, and occupying a third of the shield. It is one of the ordinaries (q.v.). If a shield is divided down the middle by a vertical line it is said to be per pale. A shield divided by a number of vertical lines is paly, the

number of divisions being specified, but if there are two such lines the shield is described as tierced or tiercy. A row of charges placed one above the other are described as in pale. See Heraldry, col. plate.

Pale (Lat. *palus*, stake). Term applied to that part of Ireland, in Dublin, Kildare, Meath, and Louth, where English law prevailed as opposed to the Celtic portion of the island. The Pale dated from the time of Henry II, though it did not bear the name until the 14th century. In the time of Henry VIII the boundary was formed by Dalkey, Tallaght, Kilcullen, Naas, Killeck, Sydan, Ardee, Derver, and Dundalk, but with the complete conquest of Ireland under Elizabeth the Pale disappeared. The term is now applied to any portion of a country whose inhabitants live under a different system of government from that of the country generally. "Outside the pale" is a figurative phrase. See Ireland.

Palembang. Town, river, and residency of Sumatra. The town is 54 m. from the sea in the S.E. of



Palembang, Sumatra. Riverside scene in the town

the island; below the town the river, also called the Musi, flows through an extensive area of marshland. The chief commercial centre of the island, it trades chiefly in coffee and pepper, particularly with Malays, Arabs, and Chinese, who reach the city by water. Many of the houses are erected upon floating platforms. A fine mosque (1740) and an ancient palace are of interest. Much of the residency is forest; here petroleum has been found. It has been Dutch since 1825. The residency has an area of 32,580 sq. m. and a pop. of 600,000. Town pop. 61,000.

Palencia. Prov. of Spain. It is in the N.W., S. of the Cantabrian Mts., from which many streams drain to the Pisuerga, which forms the N.E. boundary and crosses the S.E. of the province. The S.W. contains the marshy Laguna de la Nava in the Tierra de Campos. It



Pale, in heraldry

formed part of Old Castile, and is scantily peopled. The N. is forested, and cereals, flax, wine, and oil are produced in the S. valleys. It manufactures rugs, paper, porcelain, and leather. Three rly. routes converge on the Pisuergra valley close to the S. boundary. Area, 3,256 sq. m. Pop. 200,000.

Palencia. Walled city of Spain, the ancient Pallantia. It is the

manca in 1239. Shawls, blankets, chocolate, and bricks are manufactured. To the N.E. of the town is the Dominican convent of San Pablo, founded in the 15th century. The capital of the



Palermo, Sicily. Cathedral of the Assumption, from the south. Top, right, the harbour



Palermo. Prov. of Italy, in N. Sicily. It is hilly, the Madonia Mts. culminating in Monte San Salvatore, 6,267 ft. Rlys. run from the city of Palermo in both directions along the coast, and S.W. and S.E. across the prov. Sulphur, marble, wines, figs, lemons, oranges, and olives are the chief products. Area, 1,927 sq. m. Pop. 800,000.

Palermo. Seaport of Italy, capital of Sicily. On the N. coast of the island on the W. of the Bay of Palermo, surrounded by the fertile

capital of Palencia prov. on the Carrion river, 10 m. above its confluence with the Pisuergra, and on the E. edge of the treeless, windswept Tierra de Campos. The Late Gothic and Renaissance cathedral was begun in 1321, and has a valuable collection of Flemish tapestries. The university, founded in 1208, was transferred to Sala-

ancient Vaccaei, in the 12th century it became the seat of the Castilian kings and of the Cortes. Pop. 18,000.

Palenque. Ancient city of Mexico. One of the centres of Maya civilization, its extensive ruins are near the village of Santo Domingo del Palenque in the state of Chiapas. Remains of a number of buildings have been found, and it is thought that many more exist in the surrounding forest-clad country, for evidently the city was of great size. Of the buildings the largest is called the palace; and the others were presumably temples. Of the palace the remains of the tower

plain, the Conca d'Oro, it is backed by an amphitheatre of mountains, the chief heights of which are Monte Pellegrino and Monte Catalano. The town is built in a quadrangle, with the E. side on the sea. The ruined fort of Castellamare adjoins the water. The cathedral, built in the 12th century, contains imperial and other monuments, and was built by Archbishop Walter.



Palermo arms



Palencia, Spain. Interior of the cathedral of S. Antolin, showing entrance, at foot of altar, to cave in which the saint lived



Palenque, Mexico. East front of one of the wings of the ancient Maya palace

Work on the ruins began in 1750. See Maya; Mexico; consult also Ancient Cities of Mexico, W. H. Holmes, 1895.

The royal palace, begun by the Saracens, with additions by the Norman rulers, has been so altered that there are few traces of Norman work. It contains the Cappella Palatina, built by King Roger II in 1143, and reputed to be the most beautiful palace chapel in the world. The churches of San Salvatore, San Giovanni degli Eremiti, La Martorana, and San Domenico, the 16th century archbishop's palace, the university, the observatory, and the national museum are notable buildings. Fishing, boat-building, and iron-working are among the industries.

The city, founded by the Phoenicians, was called by the Greeks Panormos, and became an important Carthaginian stronghold, which was seized by the Romans in 254 B.C. It remained Roman until its capture by the Ostrogoths, from whom it was taken by Belisarius in A.D. 535. It fell into Saracen hands in 830, but in 1072 the city was taken by the Normans. Two hundred years later it was the scene of the

Sicilian Vespers (*q.v.*), 1282, which ended the Norman rule. A possession of Spain and the allied Bourbon house of Naples, the city vainly tried to cast off its thralldom, and as late as 1848 and 1860 was bombarded by its own sovereign, Ferdinand II, thereafter known as Bomba. It was finally captured by Garibaldi, June, 1860. Pop. 346,000. *See* Byzantine Art.

Palermo Stone. Inscribed black granite slab in the Palermo museum, Sicily. Erected in Lower Egypt during the Vth or VIth dynasty, it is engraved with linear hieroglyphs, of which the beginning and end of each line have disappeared. A brief list of independent predynastic kings in Lower Egypt before Mena is followed by a record of the main event in every year during the reigns of early kings of united Egypt down to the Vth dynasty. The annals mention the foundation of towns, endowment of temples, erection of statues, wars and expeditions, biennial census returns, religious festivals, and the height of the Nile.

Megiddo, running by the valley of Jezreel right into the Jordan; (c) Galilee; and (d) Lebanon, most of the last being in Syria. The slopes of the Palestinian hill system mostly drain inwards to (4) the Ghor, the rift of the Jordan valley, 1,300 ft. below the level of the Mediterranean at the point where the river runs into the Dead Sea. This, the deepest fissure in the earth's surface, is geologically part of the same gigantic cleft as the Red Sea and Lake Tanganyika in Central Africa; and (5) the hills east of Jordan and the arid plateau beyond, running E. into the Syro-Arabian desert.

The climate is as varied as the build of the land. Roughly, it has four divisions: the coast, the hills, the Jordan valley, the desert on the E. The W. wind from the sea predominates; its characteristic is humidity. The E. wind from the desert, dry and exhilarating in the winter, is, in the summer, extremely hot and loads the air with dust. It is fortunately infrequent. There are welcome daily sea breezes on the coast almost throughout the year. The climate is in general terms sub-tropical, with two seasons, a rainy winter, mid-October to early May, and a dry, hot summer. Palestine is a half-way house from the heavy Lebanon rainfall of Northern Syria to the almost rainless Egypt.

Divisions of Population

The population (1922 census) was 757,182, much less than that of Galilee alone in the time of Christ. Of these 250,000 live in the larger towns, and 465,000 in small towns and villages. Four-fifths of the total are Moslems (*see* Islam); 73,024 are Christians (mostly of the Orthodox Church); 83,749 are Jews, almost all of whom have entered the country since 1880.

The people may be divided as to their manner of life into (a) the town-dwelling merchants, small traders, and craftsmen; (b) the settled village peasants or fellahin (agricultural, including fruit-growing); (c) the vagrant Beduin tribes on the fringes who live in scattered groups—with from 20 tents and upward forming one camp and an average of five persons to each tent. The Beduin chief (sheikh) determines migrations, etc., aided by a council of elders. Roughly, there is a fortnightly change of camp; with a great half-yearly march of the tribes (a) into the desert edge, with thousands of camels when the rainy season begins, leaving the herds of goats and sheep and cattle behind; (b) back again to less poor grazing grounds. There are many inter-tribal raids,

PALESTINE: THE HOLY LAND

Basil Mathews, M.A., Author of *The Riddle of Nearer Asia*

This article is followed by one on the conquest of Palestine. See also the articles on Bethlehem; Jericho; Jerusalem; Jordan; and other places mentioned in the Bible story; also Crusades; Herod; Hittites; Jesus Christ; Jews; Zionism, etc.

From the rim of the hills that shelter Nazareth you can see westward to the Mediterranean, eastward across the profound trough of the Jordan valley to the mountains of Gilead and the desert, and southward over the Plain of Esdraelon—the Field of Armageddon (where Thothmes of Egypt, 1500 B.C., Barak, Gideon, Kings Saul and Josiah, the Maccabees, the Crusaders, Napoleon, and Allenby, with Indian lancers and English yeomanry, A.D. 1918, have fought)—to the hills of Samaria and the road to Jerusalem; northward, over the next ridge, lie Galilee and the mass of Hermon overlooking Damascus.

In that one view is a picture of all the essential features of Palestine—geographical, racial, climatic, historical, and industrial.

Topographical Features

On the west of Palestine the boundary is the sharp, almost harbourless straight line of the Mediterranean coast; on the east the vague fringe of cultivation across the Jordan on the edge of the absolute desert; on the south the fringe of real life again is on the desert, roughly from Gaza and Beersheba to the Gulf of Akaba. On the north the geographical line

has never been satisfactorily drawn between Palestine (or Southern Syria) and Syria proper. This administrative line on the north is (1924) from a line starting on the coast near the Ladder of Tyre running E. with an abrupt pocket to the N. to include under British administration the Jewish colony of Metulla, and then S. (east of Jordan) down the middle of the Sea of Galilee, and S.E. and E. across the Hejaz railway to Bosra and beyond.

Its area under British mandate is about 9,000 sq. m. on the W. of the Jordan; the indefinable territory E. of the Jordan into the desert is probably of equal extent, making the total approximately 18,000 sq. m. The average width from the sea to the desert across all Palestine is 100 m. Up the whole length of Palestine there are five natural geographical strips, running from S. to N. in roughly parallel lines. Taking a transverse section across them from W. to E. they are: (1) The seashore; (2) the plain by the sea, of greatly varying width, and broken here and there by the jutting mass of (3) the hills (S. to N.) of (a) Judaea; (b) Samaria (with Carmel); then the break of the Plain of Esdraelon, or



Palestine. Map showing the chief cities and ports of the country, administered by Britain under a mandate from the League of Nations, confirmed in 1922

especially in May and June, and raids on settled villages.

There is a considerable flow to and fro of emigration and immigration. Of the immigrants, by far the most numerous are the Jews. It is estimated that between 1880 and 1914, 40,000 Jews went into Palestine. The total emigrating from all Syria was 250,000 in 30 years.

Basil Mathews

ARCHAEOLOGY. Material remains of the human occupation of Palestine, unearthed since 1870, greatly elucidate and extend the biblical history. Many thousands of worked

flints attest the presence of upland hunting communities at the palaeolithic, and perhaps even the colithic, level of culture.

Early neolithic implements, still more abundant, come largely from the lower lands, better suited for primitive tillage and herding, on both Jordan banks, the Shephelah tells, and the coastlands. They include spear-heads, arrow-heads, saws, chisels, sickle-points, polished axes, millstones, and boneware.

During the 3rd millennium B.C. immigrant waves of nomad Semites began to overrun the aboriginal

settlements, aided by an advanced culture showing familiarity, direct or indirect, with Egyptian metal-working and the potter's wheel. It was apparently during this first Semitic or Amorite period, marked by the overlap of stone and metal, that there came into the southlands, from Moab across to the maritime plain, taller, stronger peoples, the biblical Rephaim and Anakim, to whom are ascribable the megalithic dolmens, menhirs, and stone-circles, which abound especially E. of Jordan.

The pre-Israelite civilization of Canaan, revealed by excavations at Gezer, Megiddo, and Taanach, shows from the outset the characteristic forms of early Semitic worship, marked by high-places, mazzebas, and asheras or sacred posts. It exhibits also the Semitic incapacity for creative art, the indigenous crafts being based upon imported models and ideas, with indifferent workmanship.

To the general Hellenistic stream which followed upon the break-up of Alexander's empire are attributable the edifices erected before and during the time of Christ, as illustrated by the excavations at Tiberias and Capernaum in 1920, and at Ascalon in 1921. Of all these, as well as of the later influences, Byzantine, Arab, Crusader, and Ottoman, substantial examples have been found, associated with pottery, glass, terra-cotta, metal-work, and other forms of industrial art.

E. G. Harmer

HISTORY. About 3300 B.C. the Nile cities and villages became one empire; about 2500 B.C. the Egyptian kings crossed the Sinai peninsula and the desert, broke through Gaza and Beersheba, and held Palestine. A thousand years later an account by Thothmes III of his invasion forms the first piece of detailed historic record; Canaanites occupied the land. Thothmes marched across the desert *via* Gaza up the coastal plain to Carmel, and thence across the hills to Megiddo, where he defeated the Canaanites. Driven back a century later from Syria by the Hittites, Egypt still held Palestine loosely. About 1200 B.C., by a treaty between the Hittites and Egyptians, Palestine fell to Egypt and Syria to the Hittites.

A series of tidal waves of immigration about this time brought (a) Arameans from Arabia, whose language was used for more than 1,000 years in many parts; (b) Khabiri from Arabia; (c) Philistines from over the sea, and last, but by far the most important, (d) Hebrews from the Southern desert.

For 150-200 years the Hebrews acknowledged no central authority; they warred against the Canaanites, and against the border Beduin peoples. During this period, that of Judges, there was "no king in Israel."

About 1100 B.C. the Philistines mastered Palestine across to the Jordan. The Hebrews, fused with the Canaanites by this common affliction, revolted against the Philistines. They felt the need of central authority and unity. The period of "kings" began. Under Saul the ridge of hills was freed as far as Gilboa. David drove the Philistines right down to the coastal plain, united Palestine, centralised government in Jerusalem, and smote the desert tribes across Jordan eastwards, even as far N. as Damascus. The Philistines and the Phoenicians on the coast remained independent.

This was the greatest rule ever exercised in all history by and from Palestine itself. There was rapid decline of power under Solomon. After his death the kingdom was divided into Judah or, roughly, Palestine, and Ephraim or, roughly, Syria.

From the 9th to the 6th century B.C., Assyria and Babylonia in their expansions and in their conflicts with one another and with Egypt continually won and lost and re-won the control of Palestine. Judah rebelled sporadically against the successive imperial tyrannies. Often the rebellion (e.g. against Assyria) was fomented by a rival power (e.g. Egypt). Yet Judah never secured real freedom; and the kingdom was destroyed in 586 B.C.

From Palestine to Babylon

Outstanding and dramatic events in this kaleidoscope of conflict between empires over the Palestinian hills were: (a) the amazing escape of Judah in 701 B.C., when the Egyptians were defeated near Ekron, and Sennacherib's stupendous forces, which threatened to engulf the tiny kingdom, were defied in immortal scorn by Isaiah (Isaiah 10), and were swept out of existence (probably by pestilence) on the Philistine plain; (b) the Egyptian victory on the plain of Megiddo (607 B.C.), with the death of King Josiah of Judah, followed swiftly by the counter-defeat of the Egyptians by Nebuchadrezzar; and (c) the deportations of the Hebrews from Palestine to Babylon (usually called the exile).

From the 6th century to the 4th, Persia, which under Cyrus captured Babylon in 539 B.C.,

took command of the provinces of Babylon, including Palestine, and set the exiles in Babylon free to go back and rebuild Jerusalem. Alexander the Great in turn overcame the Persian empire (333 B.C. onwards), and after his death and the division of his empire Palestine fell to Egypt and the dynasty of the Ptolemies, who fought the Seleucids controlling N. Syria across the prostrate body of Palestine. As these powers were enfeebled by the blows of Rome, the Jews, thrilled with patriotic and religious zeal, rose in revolt. The Maccabean family led them, 168 B.C., and the Jews won complete freedom in 143 B.C.

Palestine and Monotheism

During these centuries of conflict and exile, ideas and ideals were wrought out, personalities sprang up, and literature was written which make Palestine of greater historical importance than even the vast empires of Babylon, Assyria, and Egypt. The little city of Jerusalem could have been hidden within the walls of one palace of Nebuchadrezzar, and it was repeatedly reduced to ruin. The hills of Judea were not much larger than Sussex, and they were hardly ever free from tyranny. But, robbed of all material power and of external freedom, the people received the conception of one almighty, invisible, wise Creator—God, who was also Shepherd; and the ideal of theocracy, omnipotent over all human rule, a rule of God to whom even the all-highest of Assyrian "frightfulness," Sennacherib, was—as Isaiah said—an axe or a wooden staff, the merest tool of the invisible King, who was to bring in His kingdom "under a Prince of Peace." Those new conceptions made Palestine the source directly of two of the great monotheistic religions of the world, Judaism and Christianity, and indirectly of the third, Islam.

A new era began when Alexander the Great had swung Palestine out of the Asiatic into the Greek orbit of thought; an absolutely new world of original ideas. The centre of gravity of world history swung from E. to W., from Asia to Europe. Rome, fully armed, leapt into the Near East. The Maccabees had shared Palestine with an Arab tribe, the Nabateans. In 64 B.C. Pompey invaded the land, and in the following year reduced Jerusalem after a three months' siege. The *Pax Romana* now covered Palestine, but Herod the Great, as a prince under Rome, held Jerusalem through a five months' siege in 37 B.C.

Then in Palestine Jesus Christ was born, lived, and was crucified; and His followers proclaimed His Gospel. It was the Roman peace and the Roman roads that made the paths open for the rapid spread of the Christian faith from Palestine through the Empire.

The Jews still made political trouble in Palestine. In A.D. 70 Jerusalem was practically destroyed after a long siege. After the revolt of A.D. 132-5 Jerusalem was made a Roman colony. Through six centuries the Roman Empire held Palestine with a gradually relaxing grasp.

Then suddenly, out of Arabia, the scimitar of Islam swept, and in A.D. 635 the fall of Damascus yielded Palestine to Mahomedan rule. A fight of Heraclius against the Arabs on Aug. 20, 636, ended in his defeat. It was one of the decisive battles of the world's history, as it meant the clinching of the power of Islam. From the 7th till the 11th century Palestine was ruled by the Caliphs; and in the 11th century the Turks, coming from the N., became gradually dominant.

The next period, that of the Crusades, 12th-13th centuries, is an involved and complicated story which ended in leaving the Turkish power still dominant over Palestine. Latin colonies in Palestine persisted after the Crusades proper were over.

Industries and Education

A new terror swept down from the N. in the 13th century, in the shape of the Tartars, and the Mameluke or Tartar sultans ruled till the Ottoman Turks, in the 16th century, gained the upper hand and ruled Palestine continuously thereafter until defeated and dispossessed in 1918. The rule was similar to that all over the Turkish Empire. The population decreased. No progressive movements took place. In 1799 Napoleon invaded the country, mainly to defend Egypt. He failed to secure any real hold, though he crippled Turkish resources. Again, in 1831, Egypt, under Ibrahim Pasha, invaded Palestine and occupied it till 1840.

The industries are: (a) agriculture, in which the ancient wooden ox-plough and reaping hook are still used, though modern implements are being introduced where the soil is suitable and capital available. Grain harvests are precarious, and the best results come from combining grain agriculture (wheat and barley) with fruit growing (vines, apricots, almonds, oranges, and olives), as well as sesame, tobacco, cotton, and

sugar-cane; (b) various village industries, such as hand-milling, wine-making, weaving, dyeing, tanning, pottery making, and other handicrafts—the absence of coal or iron makes extensive factories almost impossible; (c) camel, oxen, and sheep rearing. The water power of the Jordan is not yet harnessed.

Up to the 19th century the sole education in Palestine was priestly (for the Moslem ulama, and for the Christian priests). At the beginning of the 20th century the government Moslem schools were by far the most numerous, but the number of their pupils was not greatly in excess of those in the various Christian schools, and the education they imparted was much inferior. The Jews, in proportion to their numbers, were well provided with schools of their own, and were steadily improving the quality of the instruction given. The higher education of the country was almost wholly concentrated in Beirut, where the leading institutions were the American (Protestant) College, and the (Jesuit) University of St. Joseph.

The present administration by Britain, under a mandate granted by the League of Nations, is exercised by a high commissioner and commander-in-chief (the first to

hold that double office being Sir Herbert Samuel, appointed 1920). A new constitution was announced in Sept., 1922, by which the former Advisory Council was replaced by a Legislative Council. In the same year Britain's mandate for Palestine was passed by the League of Nations. See Acre; Millstone; Transjordan, N.V.

Basil Mathews
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Palestine. City of Texas, U.S.A., the co. seat of Anderson co. It is 160 m. by rly. N. of Houston, on the International and Great Northern Rly. Its industries include the manufacture of cotton, lumber products, iron, and cottonseed oil. Salt and iron are worked in the neighbourhood, and a trade in fruit and vegetables is carried on. Palestine was settled in 1846, incorporated in 1870, and became a city in 1875. Pop. 11,000.

PALESTINE: THE BRITISH CONQUEST

Robert Machray, Writer on Foreign Affairs

In addition to this general sketch, articles are given on the battles of the campaign, and the generals who directed them, e.g. Gaza; Jerusalem; Shechem; Allenby; Chetwode; Murray

One of the chief pre-occupations of Great Britain with respect to the eastern side of the Great War, after Turkey became a belligerent, was the safeguarding of the Suez Canal. Early in Feb., 1915, a Turkish attack on the canal was defeated by the British, and in March a second assault failed. On the retirement of Sir John Maxwell, Sir Archibald Murray was made commander-in-chief of the Egyptian Expeditionary Force, and at his suggestion the British Government approved of a plan for safeguarding the canal further by driving the Turks out of the Sinaitic Peninsula, which belonged to Egypt.

With this object the Royal Engineers began building a rly. from the canal eastward towards Palestine. No fighting took place until April, 1916, when the rly. was approaching Katia. Taking advantage of the scattered disposition of the British troops, the Turks suddenly attacked at Katia (*q.v.*), and inflicted a reverse on the British, but at much greater cost to themselves. Towards the end of

July the Turks, who had a base at El Arish, made an effort to check the progress of the rly., but were thoroughly beaten early in Aug. at Romani (*q.v.*). In Dec. Murray occupied El Arish, which the Turks had evacuated on his approach, part of them withdrawing to Rafa and part to Magdhaba (*q.v.*).

Attacks on Gaza

Moving on to Rafa, on the Palestine frontier, the British again heavily defeated the Turks on Jan. 9, 1917, and drove them completely out of the N. part of Sinai. Advancing into the Holy Land, they entered Khan Yunus on Feb. 28, and marched on towards Gaza (Ghuzze). The rly. had been pushed across the desert to within a short distance of the frontier. Having successfully crossed the Ghuzze, the wadi anciently known as the river of Gaza and 2 or 3 m. from Gaza itself, the British attacked the town on March 26, but failed to take it, and on March 28 they fell back to the wadi. A second attempt to capture it on April 19 also failed; consequently changes were made in the commands, and

General Allenby replaced Murray. After several months of intensive preparation, Allenby renewed the British offensive. Meanwhile the Turks had made their front, which stretched from Gaza E. to Beersheba, exceedingly strong. On Oct. 27 Allenby began by bombarding Gaza by land and sea, but his real attack was on Beersheba, at the extreme E. end of the enemy's line, which was captured on Oct. 31. Having crushed in the Turkish left, he proceeded to roll up the front from that side. Then, heavily defeating the enemy at Sheria, he moved W. on Gaza, which fell on Nov. 7. Pushing N. without delay, he took Huj and Jemmameh, and occupied Ascalon, Ashdod, and Gath. On Nov. 13 he won a considerable victory at El Mughar (*q.v.*), and next day held the junction station of the Central Palestine and Jerusalem rlys.

Allenby had determined on the capture of Jerusalem, but first made his left secure by driving the Turks up from the coastal plain and by taking Jaffa (Joppa) on Nov. 17. Advancing from Ramleh, occupied by him on Nov. 15, he marched through the Judean hills towards Jerusalem; but after heavy fighting, which brought him in sight of his objective, he was held up on Nov. 23-24. Meanwhile the rly. was being carried towards Jerusalem with the utmost rapidity, and his engineers besides made the roads that were required among the hills.

Surrender of Jerusalem

Allenby's right flank moved forward and occupied Hebron on Dec. 6. In spite of most unfavourable weather, his troops on Dec. 8 were by nightfall only $1\frac{1}{2}$ m. from Jerusalem on the W. Next morning he found that the Turks had evacuated the Holy City, and about noon the mayor appeared bearing a letter from the enemy formally surrendering it. On Dec. 11 Allenby made his official entry into Jerusalem.

The Turks were no more than 4 m. away on the N. and E., and Allenby's first business, after arranging for the government of the city, was to drive them farther back and to consolidate his whole line, now about 50 m. long, to the sea. He began by forcing the Nahr el Auja on his extreme left on Dec. 20-21, and began a forward movement immediately N. of Jerusalem, but was checked by the discovery that the Turks were undertaking an offensive with the object of retaking the city. For two days the enemy attacked with great resolution, but, after some slight successes, he was beaten back, and on

Dec. 28 Allenby passed to a general assault which, by the close of the following day, resulted in the total defeat of the Turks and the advance of the British.

On Jan. 1, 1918, the British at Bethel were about 12 m. N. of Jerusalem, and held a line of villages on both sides of the Shechem road, advancing later to Durah. On Feb. 21, after heavy fighting in the hills E. of the Holy City, Jericho was occupied. In March, Allenby made further progress on both sides of the Shechem road and took Tel Asur. During the same month he made a raid on Amman, E. of the Jordan, in the course of which he held Es Salt for a short time. In April he defeated a Turco-German offensive, the centres of which were Berukin, 18 m. N.E. of Jaffa, and El Ghoraniyeh, on the Jordan, E. of Jericho. A second raid on Amman, which started on April 30, and in the course of which Es Salt was again occupied and evacuated, was not entirely a success.

During April and May considerable changes, occasioned by the situation on the Western Front, were made in Allenby's command. The 52nd and 74th divisions left Palestine, and were replaced by the 7th (Meerut) division and the 3rd (Lahore) division from India. The other British divisions were depleted of battalions, and various yeomanry regiments were withdrawn, their places being taken by Indian cavalry from Mesopotamia.

After weeks of training Allenby passed to the great offensive. It began on the night of Sept. 18-19, and lasted until the 24th. The marked successes of the British infantry were followed up by the cavalry, who cut off the Turkish retreat and swept up thousands of prisoners. The Turkish armies were destroyed, several towns were taken, and by the 25th, except on the E. side of the Jordan, the conquest of Palestine was complete.

The 4th Turkish Army was endeavouring to retreat N. along the Hejaz railway, pursued by Australian, New Zealand, West Indian, and Jewish troops. Anzacs occupied Es Salt on Sept. 23, and Amman two days later; thus the retreating Turks were broken in two. Up to the evening of Sept. 27 5,700 Turks were taken prisoner in the Amman district. On Sept. 29 the garrison, 5,000 strong, of Maan, which the Arabs had taken, surrendered to the British at Ziza. Further N. the Arabs, who had occupied Deraa, intercepted the Turkish retreat, and only a small part of the 4th Turkish Army

escaped. W. of the Jordan the enemy was driven on at Jisr Benat Yakub, and on Sept. 29 the British and the Arabs were advancing on Damascus. By that date the conquest of Palestine was completed. The number of prisoners had swollen to 60,000, and upwards of 330 guns had been captured.

Bibliography. The Great War, ed. H. W. Wilson and J. A. Hammerton, 1914-19; The Times History of the War, 1914-20; The Desert Campaigns, W. T. Massey, 1918; How Jerusalem Was Won, W. T. Massey, 1919; With the British Army in the Holy Land, H. O. Lock, 1919; With Our Army in Palestine, A. Bluett, 1919; Allenby's Final Triumph, W. T. Massey, 1920; The Desert Mounted Corps: An Account of the Cavalry Operations in Palestine and Syria, 1917-18, R. M. P. Preston, 1921.

Palestine Exploration Fund. British archaeological organization. Founded in London, 1864, it carries on excavations in Palestine and Syria. Originally the society's activity was chiefly directed towards unearthing Biblical sites, and publishing its results. A number of special enterprises have been organized. In 1865-66 Captain Wilson led the first expedition to determine the places and sites to be investigated, and a similar one was commanded by Lieut. (later Sir) Charles Warren, 1867-70. An important survey of western Palestine and Cyprus was undertaken in 1872-77. In 1881 Captain Conder surveyed eastern Palestine; in 1890-93 work was carried out at the buried cities of Tell-el-Hesi, in which Flinders Petrie and F. J. Bliss took part. In more recent years special excavations were conducted in the south wall of Jerusalem, the ruins of Gath, Gezer, Beth-Shelesh, and many other Biblical sites. In 1920 work was re-started in conjunction with the British School of Archaeology at Jerusalem.

The society has organized the making of large scale maps, and published numerous accounts of its work. It issues a quarterly statement, an annual, and has a Palestine museum and library at its headquarters, 2, Hinde Street, Manchester Square, London. See *Archaeology*; consult also *Thirty Years' Work in the Holy Land*, W. Besant and C. R. Conder, 1895.

Palestrina. City of Italy, in the prov. of Rome. It is 23 m. E.S.E. of the capital, and occupies the site of the Roman city of Praeneste. The modern town, with steep streets, is picturesquely situated on a hillside, and is almost entirely built over the ruins of a vast temple of Fortuna, which graced the Roman city.

Praeneste or Palestrina came in the Middle Ages into the possession of the Colonna family, but in 1298, during a war with the pope it was destroyed, as it was, after it had been rebuilt, by the pope's troops in 1448. The Colonnas, however, again restored it, and from them it passed to the Barberini family. There are remains of the castle of the Colonnas, and of the citadel, while the palace of the Barberini still stands. In the latter building are some of the objects of art found in the neighbourhood. The cathedral is modern. Apart from the Temple of Fortune, the Roman remains include walls and a villa. Pop. 7,000. See *Praeneste*.

Palestrina, GIOVANNI PIERLUIGI DA (1524-84). Italian composer. Born at Palestrina, from which he



G. P. da Palestrina
Italian composer

took his name, he studied in Rome about 1540, and, returning to his native town, was canon and organist there from 1544-51, when he was made master of music at the Vatican. On the accession of Paul IV, in 1555, he lost this post, but soon filled a similar one at S. John Lateran. In 1571 he returned to the Vatican, and remained there until his death, Feb. 2, 1594. Palestrina was the greatest master of polyphonic music who ever lived. His famous Masses represent the most perfect type for vocal music in the modal style, and are landmarks in the history of religious music, especially, perhaps, the one he composed for Pope Marcellus II. He also composed some madrigals, and made 29 settings of the Song of Solomon.

Palestro. Village of N. Italy. It is in Pavia prov., near Vercelli, 34 m. W.S.W. of Milan. The village was the scene of heavy fighting between the Austrians and allied French and Sardinians, May 30-31, 1859. The brunt of the battle fell on the Sardinian troops, a division of whom were led into action by Victor Emmanuel, whose bravery was so conspicuous that a French regiment elected him their corporal. The Austrians were routed with a loss of 1,500, and began the retreat which led to Magenta and Solferino.

Palette (Fr., little shovel). Thin slab of wood or porcelain, on which a painter lays and mixes his colours. There is a hole for the left thumb. A more or less oval shape was

preferred by the old painters. Modern artists often use the rectangular form.

Palette setting is the arrangement by the painter of the colours on his palette, before beginning



Palette, for oil painting

work. The authenticated palettes of great masters are a guide to general principles in palette setting. The most famous and exemplary in point of simplicity is that

of Rubens, who set his palette with only 12 colours. *See* Painting.

PALEY, WILLIAM (1743-1805). British theologian. Born at Peterborough, the son of a schoolmaster, he was educated at Giggleswick and Christ's College, Cambridge. In 1763 he was senior wrangler, and for a time he was a tutor and lecturer in the university. In 1776 he took a living in Westmorland; in 1782 he was made archdeacon of Carlisle, and later rector of Bishop Wearmouth. He died at Lincoln, where he was sub-dean, May 25, 1805, and was buried in Carlisle Cathedral. Paley's writings include *Principles of Moral and Political Philosophy*, 1785; the popular *Evidences of Christianity*, 1794; and *Natural Theology*, 1802. *See* Works, new ed. 1838; *Life*, G. W. Meadley, 1809.



W. Paley

Palghat. Town of Madras Presidency, India, in Malabar dist. It is situated at the W. end of the Palghat Gap on the main Madras-Calicut rly. Pop. 44,300.

Palghat Gap. Outstanding physical feature of the Deccan, India. The Deccan plateau is edged by the escarpments of the E. and W. Ghats which join in the Nilgiri Hills. The S. face of the Nilgiri comprises a scarp as steep as the seaward face of the W. Ghats. The S. Deccan consists of a continuation of the W. Ghats. Between these heights and the Nilgiris is a wide gap, the Palghat, which is the one large break in the W. escarpment, and is the only easy route of communication between the Malabar and Coromandel coasts. It is 20 m. wide and just over 1,000 ft. high, and carries the main rly. line from Madras to Calicut

Palgrave, Sir FRANCIS (1788-1861). British historian. Son of Meyer Cohen, a Jew, he married



Sir Francis Palgrave, British historian
After G. Richmond, R.A.

Elizabeth Turner, adopted the name of Palgrave, that of his wife's mother, and embraced Christianity in 1823. Called to the bar at Middle Temple in 1827, he was knighted in 1832, was deputy keeper of the public records, 1836-61, did much to promote the study of medieval history, and died at Hampstead, July 6, 1861. He wrote *The Rise and Progress of the English Commonwealth*, 1832; *Truths and Fictions of the Middle Ages*, 1837; and *The History of Normandy and England*, 4 vols., 1851-64. *See* Historical Works, collected, R. H. J. Palgrave, 1919-20.

Palgrave, FRANCIS TURNER (1824-97). British poet and critic. Born in London, Sept. 28, 1824, eldest son of the historian Sir Francis Palgrave, he was educated at the Charterhouse and Balliol College, Oxford. He joined the education department, and after his retirement was in 1886 appointed professor of poetry at Oxford. He died Oct. 25, 1897. He wrote a certain amount of original poetry, but his fame rests chiefly on the work he did as editor of poetical anthologies, above all, *The Golden Treasury of English Lyrics*, 1861-97 (many editions). *See* *Life*, G. F. Palgrave, 1899.



F. T. Palgrave, British poet
Elliot & Fry

Palgrave, Sir ROBERT HARRY (1827-1919). British economist. Born in London, June 11,



Sir Robert Palgrave, British economist
Elliot & Fry

1827, he was the third son of Sir Francis Palgrave and one of four talented brothers. Educated at the Charterhouse, he became a banker and was soon a partner in the bank of Gurney, Birkbeck and Co., of Great Yarmouth, and when it was merged in Barclay's Bank became a director of the larger concern. From 1877-83 he was editor of *The Economist*, and

he was a member of the royal commission on trade depression in 1885. He wrote much on banking and economics, and was the editor of *The Dictionary of Political Economy*, 1894-1914. In 1909 he was knighted. Palgrave died at Bournemouth, Jan. 25, 1919.

Palgrave, WILLIAM GIFFORD (1826-88). British diplomat. Born Jan. 24, 1826, the second son of Sir



W. G. Palgrave, British diplomat

Francis Palgrave, he was educated at the Charterhouse and Oxford, and joined the East India Company's forces. When in India he became a Jesuit priest and later worked as a missionary in Syria. In 1862-63 he made a journey across Central Arabia disguised as a Syrian, and recorded his many adventures in his *Narrative of a Year's Journey Through Central and Eastern Arabia*, 1865. Upon his return he left the Jesuits and entered the British diplomatic service. In 1865 he was sent on a mission to Abyssinia, was appointed consul at Trebizond, and made explorations in N. Asia Minor. He was appointed minister to Uruguay in 1884 and died at Monte Video, Sept. 30, 1888.

Pali (canon). One of the oldest popular dialects of India. It is the language of the sacred books of the Buddhists, who themselves call it Magadhi, the language of Magadha, where Buddha preached in it. The Pali characters are akin to those of Sanskrit, from which it is derived. Its extensive literature includes Tipitaka (the three baskets), the Buddhist scriptures; the commentaries on them; the Questions of Menander, a religious discussion with a Bactrian king, and two valuable chronicles of Ceylon.

Palimpsest (Gr. *palimpsestos*, rubbed again). Ancient manuscript whose writing has been imperfectly effaced and its material re-used. Vellum was washed and rubbed, papyrus was sponged. The Codex Ephraemi in Paris, a 5th century Greek Biblical text, was overwritten in the 12th century with the works of Ephraem Syrus. Examples of double palimpsests are known. The term is loosely used for monumental brasses and stone slabs, reused on the back without erasure of the front. It is applied also to re-worked flint implements, regarded as archaeological documents. *See* Manuscript; Palaeography.

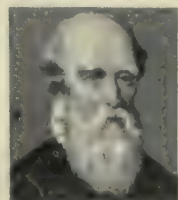
Palindrome (Gr. *palindromos*, running backwards). Word or sentence which reads the same forwards or backwards. An example is the saying put in the mouth of Napoleon, "Able was I ere I saw Elba."

Palingenesis (Gr. *palin*, again; *genesis*, birth). Metaphorically, the regeneration of anything old, such as institutions or mankind as a whole. Philosophically, the theory that all living beings, animals as well as men, will be born again to a more perfect state. Biologically, the reproduction of ancestral characteristics without any change, as opposed to cenogenesis. See Heredity.

Palinode (Gr. *palin*, contrariwise; *ōdē*, song). Ode in which the poet retracts the substance of an earlier poem, a recantation. Stesichorus (fl. c. 610 B.C.) wrote a palinode recanting an attack on Helen, and Horace, *Od.* i, 16, retracts the hasty iambic diatribes he launched against Canidia in his 5th and 17th Epodes charging her with sorcery. See Ode; Poetry.

Palinurus. In classical legend, the steersman of the ship of Aeneas. The promontory of Palinurus, now Cape Spartivento, on the coast of Lucania, in Italy, is said in the Aeneid to have been named from this hero, who there fell into the sea.

Palissy, BERNARD (c. 1510-89). French potter. Born in S.W. France, he was brought up to his



Bernard Palissy,
French potter

father's trade of glass-painting. At Saint-onge he began experiments which, after 16 years of effort, resulted, in 1557, in his perfecting the process of coloured enamel ware which bears his name. He was imprisoned as a Huguenot in 1562, but was released through the influence of the Duc de Montmorency, and in 1564-65 set up his workshop in the Tuileries. Towards the end of his life he was again arrested as a heretic, and imprisoned in the Bastille, where he died. See Pottery; consult also Palissy the Potter, H. Morley, 1852.

Palitana. Native state and town of India, in Kathiawar, Bombay province. The state lies in the S.E. of the peninsula of Kathiawar. Grain, sugar-cane, and cotton are grown. The town, 120 m. S.W. of Ahmadabad, is an inland terminus of a branch rly. line, with connexions to Mehsana and Bhavnagar. The holy mt. of Satrunjaya,

covered with Jain temples, dominates the town. The area of the state is 290 sq. m. Pop., state, 60,700; town, 13,400.

Palk Strait. Shallow channel separating N. Ceylon from the Deccan. It lies N. of Adam's Bridge, which separates it from the Gulf of Mannar. It is 45 m. wide at the Bay of Bengal entrance and opens out to the S.W., leading to Palk Bay. The name, originally Palk's Straits, appeared first on a map in 1764, in honour of the then governor of Madras.

Pall. Heavy cloth, black, purple, or white in colour, used to cover a coffin or bier. Pall bearers are men who walk by the side of the coffin, holding the corners of the pall. At the funerals of royalties and great men, men of eminence usually act as pall bearers.

Pall. In heraldry, a charge in the form of the capital letter Y. It is supposed to represent the *pallium*, and sometimes depicted as such, the lower end terminating in a fringe. More commonly all three ends touch the edge of the shield, unless it is described as couped, with the ends cut off. It should occupy about a third of the field, and is by some authorities classed as a subordinary (*q.v.*). If the ends are cut off to form points the charge is called a shakefork.

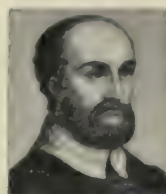
Palladian. Style of classical architecture associated with Andrea Palladio. Simple, correct, and rather cold in form, it was invented to meet the special demands of Venetian patrons, who desired villas and palaces which, while serving all utilitarian purposes, should at the same time present a well-balanced and dignified exterior in the neo-classic manner.

In real Palladian buildings, such as the Palazzo Thiene at Vicenza, a favourite device is the use of two orders of columns or pilasters, the minor order being used to support the arches which occurred between the major. Palladio preferred the Ionic order, and his Corinthian capitals were not well done. He avoided the broken pediment and the pedestal; always composed his cornices with an eye to the order employed; and was scrupulously exact in the mathematical arrangement of his doors and windows. See Architecture; Jones, Inigo.

Palladino, EUSAPIA (1854-1918). Italian medium. Born in La Pouille, she first exhibited psychic powers at a séance in Naples, where she was employed as a kitchenmaid. Adopting the career of a medium, she attracted wide attention, and gave séances in England and America. Though detected in de-

liberate deception on several occasions, the phenomena observed in her presence—levitations of furniture, etc.—puzzled many investigators. She died at Naples, May 16, 1918. See The New Revelation, A. Conan Doyle, 1918.

Palladio, ANDREA (1518-80). Italian architect. Born at Vicenza, Nov. 30, 1518, he studied under



Andrea Palladio,
Italian architect

Trissino, and at Rome. He is the chief exponent of the new Roman as opposed to the Renaissance architecture. His work was divided mainly between Vicenza and Venice;

at the latter city he built the Foscari palace, the Redentore church, and the Carità, and an endless series of villas. His influence on foreign styles was enormous. He died at Vicenza, Aug. 19, 1580.

Palladium. In Greek legend, a statue of Pallas Athena, which fell from heaven, and was kept in the city of Troy, which could not be taken so long as this statue was there. Shortly before the fall of Troy it was abstracted by Odysseus and Diomedes, who entered the city in disguise. According to another legend, the Palladium was taken to Italy by Aeneas after the fall of Troy, and several cities professed to own it. It was probably a meteoric stone. In modern language the word is used for a safeguard.

Palladium. Rare elementary metal belonging to the platinum group. Its chemical symbol is Pd. atomic weight, 106.2; specific gravity, 11.40; and melting point, 1,500° C. (2,732° Fah.). The colour is white with a strong lustre, resembling platinum. It is malleable and ductile, can be readily welded, and approaches steel in hardness. It is the most fusible of the platinum group.

It occurs native, but associated with platinum and iridium, in the Urals, and with gold and silver in certain of the gold sands of Brazil. The chief source, however, is the nickeliferous ores of Ontario. It was first recognized by Dr. Francis J. H. Wollaston in 1803. Because of its great resistance to corrosion by air and moisture, and its hardness, it is used for certain parts of the mechanism of chronometers and special watches, and for chemical and surgical appliances. It is also employed in toning baths in photography. It has great power for absorbing gases. See Platinum.

Pallas. One of the minor planets or asteroids. It is remarkable for its great inclination of 34 degrees to the ecliptic. The second to be discovered, it was found on March 28, 1802, by Olbers (1758-1840). See Asteroids.

Pallas. In Greek mythology, epithet of, and later name for, the goddess Athena. It perhaps means virgin. One of the Titans was also called Pallas. See Athena.

Pallas. Freedman of the Roman emperor Claudius. Together with another freedman named Narcissus, and Agrippina, wife of Claudius, he administered the empire. On the accession of Nero he was dismissed from office, and, after living some years in retirement, fell a victim to Nero's desire to possess his immense fortune.

Palliser, Sir HUGH (1723-96). British admiral. The son of a soldier, he was born in Yorkshire, Feb. 26, 1723, and entered the navy in 1735. He saw a good deal of service, both before and after 1746, when he obtained command of a ship, and in 1759 took part in the operations against Quebec. In 1764 he was made governor and commander-in-chief at Newfoundland; in 1770 controller of the navy; and in 1773 a baronet. When serving under Keppel in July, 1778, the French fleet was engaged, but the action was not pressed to a conclusion. As a result, Palliser, whose house was burned by a mob, resigned his office and was tried by a court-martial, which gave an ambiguous verdict. However, he was made governor of Greenwich Hospital and an admiral, and he died March 19, 1796.

Palliser, Sir WILLIAM (1830-82). British soldier. Born in Dublin, June 18, 1830, and entering the



Sir W. Palliser,
British soldier

army, from which he retired in 1871, he made a number of inventions connected with ordnance. The chief of these were a new method of big gun construction by the use of concentric tubes of metal, the Palliser bolts for holding armour plates, and a method of chill-casting projectiles. He died Feb. 4, 1882.

Pallium or **PALL** (Lat., cloak). Ecclesiastical vestment. Bestowed by the pope upon archbishops and certain bishops of the Latin Church, and equivalent to the *omophorion* of the Greek Church, it is made of white woollen cloth, Y-shaped, worn over the shoulders, falling

back and front, and is embroidered with black or purple crosses. It signifies that the wearer possesses



Pallium worn
by archbishops of
the Latin Church
Burns, Oates
& Washbourne

fullness of the episcopal office, and is buried with him. Of obscure origin, it is supposed to have affinity with the breastplate of the Jewish high priest. In early times the word was applied by the Romans to the Greek cloak (*himation*), particularly affected by Diogenes and his followers.

Later it became, in an enriched form, the robe of the emperor.

Pall Mall. London thoroughfare. It runs W. from the junction of Cockspur Street and Pall Mall East, where is an equestrian statue of George III by Wyatt (1836), to St. James's Palace. Originally formed about 1690, and at first called Catherine Street, it is, like The Mall (*q.v.*), named after the French game of *paille-maille*, or *pail-maill*, played here in the 17th century. On its S. side, going W., are the United Service, Athenaeum, Travellers', Reform, Carlton, Royal Automobile, Oxford and Cambridge, Marlborough, and Guards' clubs; on the N. side the Junior Carlton and Army and Navy clubs.

The R.A.C. is on the site of the old war office, which was formed from part of Schomberg House, 1650, once the residence of Cosway and Gainsborough. At the S.W. extremity is the entrance to Marlborough House. On the site of No. 79 was a house which belonged to Nell Gwynn. At No. 51, Dodsley, the publisher, had a shop. At the old Star and Garter inn, Jan. 24, 1765, the 5th Lord Byron fatally wounded Mr. Chaworth in a duel. The Royal Society of Painters in Water Colours has its gallery in Pall Mall East, which runs W. from the National Gallery. Pall Mall was the first London street to be lighted with gas, Jan., 1807. See Haymarket; London; Waterloo Place.

Pall Mall. Obsolete game, called *paille-maille* in France, whence it was introduced into England in the reign of Charles I. It

was a kind of combination of croquet and golf, boxwood balls being driven by mallets through iron hoops set in an alley about 800 yards in length and floored with powdered cockle-shells. The game, which enjoyed great popularity after the Restoration, is mentioned several times by Pepys in his diary. It was originally played in the long alley near St. James's Palace now called Pall Mall, and there was another alley for it in St. James's Park. A mallet and some balls used in the game were found in a house in Pall Mall when being demolished in 1845, and are now in the British Museum.

Pall Mall Gazette, THE. London evening newspaper, established by George M. Smith, Feb. 7, 1865. Frederick Greenwood was the first editor. The description of his experiences as An Amateur Casual, by James Greenwood, and



Pall Mall, London. The street, looking west from Waterloo Place. On the left is the Athenaeum Club

Matthew Arnold's *Friendship's Garland*, appeared originally in the P.M.G., which became the property of the founder's son-in-law, Henry Yates Thompson, in 1890. Succeeding editors included John (Viscount) Morley, W. T. Stead, who created a sensation by his articles on *The Maiden Tribute of Modern Babylon*, which led to his imprisonment in Holloway; and E. T. (afterwards Sir Edward) Cook. The paper was acquired by the first Lord Astor in 1892, by Davison Dalziel in 1915, and by Sir J. Henry Dalziel in 1917. In Oct., 1920, the Hon. Morton Weir acquired portion of Sir H. Dalziel's interest, and in 1921 *The Globe* was amalgamated with it. It was incorporated in *The Evening Standard*, 1923. The Pall Mall Magazine, *The Pall Mall Budget*, and a series of Pall Mall extras were issued from the offices of the P.M.G. The title of the paper was taken from that "Written by Gentlemen for Gentlemen" in Thackeray's novel, *Pendennis*.

Palm. Old, natural measure of length, taken from either the breadth or the length of a man's hand. In Britain a palm was reckoned either as three or four inches, in Roman measure it equalled about 3 ins. The word is used in Holland as the equivalent of one decimetre. See Hand.

Palm (Palmae). Natural order of trees, natives of tropical and sub-tropical regions. There are about 1,100 known species distributed in 128 genera, many of them familiar from their economic importance—such as coconut (*Cocos nucifera*), oil-palm (*Elais guineensis*), date (*Phoenix dactylifera*), betel (*Arecia catechu*), wine-palm (*Raphia vinifera*), etc., all of which are described under their names. There is only one European species (*Chamaerops humilis*), which is found in the Mediterranean region. In a few cases, such as nipa and vegetable ivory (*Phytelephas*), the stem is dwarfed and the leaves radical, but, as a rule, it is tall (up to 150 ft.), unbranched, and terminates above in a crown of very large fan-shaped or feather-shaped leaves. These are attached to the stem by a firm sheath, which remains after the leaf is dead, and gives the characteristic ruggedness to the stem.

The flowers are produced in a great branching cluster, usually from the axils of the leaves. In some species male and female flowers are produced by the same tree, in others the sexes are in separate trees. The fruits are either berries, plum-like (drupes), or, as in the coconut, invested with a hard woody shell covered with a very thick fibrous husk. Coconuts and dates are of great importance as food, and large quantities of sugary fluid or starch are furnished by the stems of some species. The leaves are utilised for thatching, basket-making, mats, and hats, and the fibres of the leaf-sheaths are of considerable economic importance.

A number of species are in cultivation in greenhouses as ornamental foliage plants, mostly in a juvenile condition. See *Assai*; *Australian Feather Palm*; *Bactris*; *Coconut Palm*; *Date*; *Deleb Palm*; *Doom Palm*; *Fan Palm*; *Miriti Palm*; *Oil Palm*; *Raphia*; *Rattan*; *Toddy Palm*; *Wax Palm*, etc.

Palma. Town of Spain. Capital of the prov. of Baleares (Balearic Isles), it is a seaport on the S.W. coast of Majorca, 135 m. from Barcelona. Built in an amphitheatre overlooking the bay of the same name, with orange groves outside the walls, the houses are in the Moorish style. The Gothic cathedral dates from 1232–1601; the ex-

change and the governor's palace are interesting buildings. Manufactures include silks, woollens, liqueurs, chocolate. It is the port for the island and trades especially in fruit and vegetables. Pop. 68,000.

Palma or **SAN MIGUEL DE PALMA.** Most westerly of the

Canary Islands.

Lying 87 m.

W.N.W. from Ten-

eriffe, it is 26 m.

long by 16 m.

wide, and has an

area of 280 sq. m.

The mountainous

interior culmin-

ates in the Pico

de la Cruz, 7,740

ft., and contains

the extinct vol-

cano, La Caldera,

with a crater

5,000 ft. deep.

Wines, fruits,

honey, and silk

are produced in

the fertile wooded

valleys. The

capital is Santa Cruz,

on the E.

coast. Pop. 42,000.

Palma di Montechiaro. Town

of Italy, in Girgenti prov., Sicily. It

is a small modern town noted for

the quality of its almonds, and is

reached by steamboat from Licata

or Porto Empedocle. Pop. 14,000.

Palma Vecchio (c. 1480–1528).

Name by which Giacomo Negretti

or Palma, Italian painter, is gener-

ally known.

Born near Ber-

gamo, he prob-

ably studied

under Cima at

Venice, where

he continued

to work, and

where he died,

July 28, 1528.

Strongly in-

fluenced by

Titian and



Palma Vecchio,
Italian painter
Self-portrait in Pina-
kothek, Munich

Giorgione, his classic composition and characteristic colouring make his work easily recognizable, especially his Holy Conversation pictures. Examples of his work are best seen in Venice, Dresden, and Vienna. He is called Vecchio (old) to distinguish him from his grand-



Palm Beach, Florida. The winter resort from across the harbour; in the foreground is the beautiful private residence known as White Hall

nephew Jacopo Palma (1544–1628). See Barbara, S.

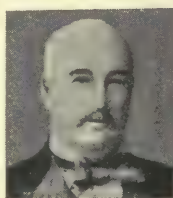
Palm Beach. Winter resort of Florida, U.S.A., in Palm Beach co. It stands on a narrow strip of land 30 m. long, separating Lake Worth from the Atlantic, and is 300 m. by rly. S.E. of Jacksonville. It has splendid facilities for boating and bathing. Pop. 1,250.

Palmer. Name given to any Christian who had made a pilgrimage to the Holy Land. He brought back a consecrated palm staff or branch as evidence of his journey. The modern surname Palmer is probably a survival. See Pilgrim.

Palmer, Sir Charles Mark (1822–1907). British shipbuilder. Born at South Shields, Nov. 3, 1822, he joined a shipping firm in Newcastle. Later, in 1850 he built the first iron screw collier to develop the coal trade with London, and then added others. In the



Palma, Majorca. The town and inner harbour from the Terreno suburb



Sir Charles Palmer,
British shipbuilder

meantime he had become interested in coal and iron, and erected huge works at Jarrow. He was M.P. for North Durham, 1874-85, and for Durham (Jarrow) until his death, June 3, 1907. He was created a baronet in 1886.

Palmer, GEORGE (1818-97). British manufacturer. Born Jan. 18, 1818, at Long Sutton, Somerset, of Quaker parents, he was educated at the Quaker school, Sidcot, near Weston-super-Mare, and apprenticed to a miller at Taunton. In 1841 he joined Thomas Huntley in establishing the biscuit-making firm of Huntley and Palmer at Reading. He was mayor of Reading in 1857. From 1878-85 he was Liberal member for the town, to which he was a generous benefactor. He died at Reading, Aug. 19, 1897.



George Palmer,
British manufacturer
Russell

Palmer, SAMUEL (1805-81). British painter and etcher. Born in London, Jan. 27, 1805, he studied chiefly under John Linnell, whose son-in-law he afterwards became. Palmer developed a poetic talent in water-colour landscapes, and was elected a member of the R.W.S. in 1854.



Samuel Palmer,
British painter
After J. Linnell

He translated Virgil's *Elogues*, illustrated by his own etchings; and made drawings for the works of Milton. He died at Reigate, May 24, 1881.

Palmer, WILLIAM (1825-56). British poisoner. He was hanged at Stafford Gaol, June 14, 1856, for poisoning a racing associate, John Parsons Cook, with antimony and strychnine. Palmer was a country surgeon at Rugeley, Staffordshire, when he became involved with moneylenders as a result of betting. By 1855 he was driven to raise money by forged acceptances, and it was the fear of disclosure and prosecution which drove him to his final crime. His victim Cook won the Shrewsbury Handicap with his

horse Polestar, and a large sum of money in bets, which Palmer determined to obtain. Cook put up at the Talbot Arms, opposite Palmer's house at Rugeley. Cook was taken ill, and from the morning of Nov. 17, 1855, to the evening of the victim's death on the 20th, Palmer literally administered everything that passed the sick man's lips. Palmer is supposed to have poisoned at least six other persons, including his brother and mother-in-law, whose lives he had insured. See *Trial of William Palmer*, ed. George Knott, 1912.

Palmerston. Port of Australia, in Northern Territory, now known as Darwin (*q.v.*).

Palmerston, HENRY JOHN TEMPLE, 3RD VISCOUNT (1784-1865). British statesman. Born Oct. 20, 1784, at his father's seat, Broadlands, Hampshire, he belonged to an Irish branch of the family of Temple. Sir John Temple, speaker of the Irish House of Commons, had a son Henry, who, in 1723, was made an Irish viscount. His grandson was the statesman's father. Educated at Harrow and Cambridge, Henry succeeded in 1802 to the title, and in 1807 entered the House of Commons as M.P. for Newtown, Isle of Wight. At once he was appointed a lord of the admiralty, and in 1809 he became secretary at war, an office he retained until 1828, being in the Cabinet during the latter part of the time.

A Tory, he served under Perceval, Liverpool, and their successors, but after Canning's death, like other of that statesman's followers, he gravitated towards the Whigs. In 1830 he was made foreign secretary under Lord Grey, and he was at the foreign office with the Whigs until 1841, except for a short period in 1834-35, and again in 1846. In 1851, having offended the queen and his colleagues by acting without consulting them, he was dismissed. He was home secretary 1853-55, when disgust at the management of the Crimean War brought him the post of prime minister. He left office in 1858, but in 1859 he was again in power, and he remained prime minister until his death, Oct. 18, 1865. From 1811-31 he had represented the university of Cambridge, and from 1831-65 the borough of Tiverton.

Palmerston was notable for his vigorous and even aggressive assertion of Britain's rights. For thirty years the spokesman of his country to foreign powers, he was largely responsible for the separation of Holland and Belgium in 1830; was very active in checking



Palmerston

the influence of Russia at Constantinople; and was continually suspicious of France. Never afraid of responsibility, he often ignored his colleagues and as often offended foreign statesmen, but his obvious devotion to British interests and his plainness of speech made him popular with the people.

Very autocratic, especially in his later years, his conservative attitude of mind was responsible for the postponement by the Liberal party of democratic measures which were put forward after his death. He left no children, and his estates, including Broadlands, his seat at Romsey, passed to Lord Mount Temple, and then to the Hon. E. Ashley, both being related to Lady Palmerston, who was the widow of the 5th Earl Cowper. Palmerston was a nobleman of the old school, a sportsman, fond of society, the card table, and the racecourse, but possessing also the graces that marked the last of his kind. See *United Kingdom*; consult also *Lives*, Hon. E. Ashley, 1879; Lloyd Sanders, 1888.

Palmerston North. Town of North Island, New Zealand, 88 m. from Wellington. It is a rly. junction; the industries of the neighbourhood are chiefly saw-milling and dairy-farming, and it has a government experimental farm. Pop. 12,800; with suburbs, 14,000.

Palmetto (*Sabal palmetto*). Tree of the natural order Palmae. It is a native of southern N. America, and has a stem from 20 to 40 ft. in height, with a spreading crown of long-stalked, heart-shaped leaves, 6 to 8 ft. long, with numerous divisions from the margins. The leaves are split up and plaited into "chip" hats.

Palmi. Town of Italy, in Reggio di Calabria. It is situated on the slope of Monte Elia amid orange groves and olive plantations, has a port on the Gulf of Gioia, and is 26 m. by rly. from Reggio. It is in the earthquake zone and suffered severely in 1783 and in 1908. Pop. 10,000.

Palmira. Town of Colombia. It is in the Central Valley W. of the Central Cordillera, on the main road through the Cauca Valley, 160 m. S.W. of Bogotá and 10 m. from the rly. terminus of Cali. It is the centre of a fertile dist. notable for its tobacco. Pop. 25,000.

Palmistry. Science of hand reading, also called cheiromancy. The art or practice is of great antiquity and in the Middle Ages was considered one of the black arts. Palmistry is divided into two heads, cheirognomy, which deals with character reading from shape and texture of hand, fingers, and nails, and cheirognomy, which deals with marks and lines on the palm, by which are read past, present, and future events. The fingers are named Jupiter, Saturn, Apollo, and Mercury, and the fleshy pads at the base of the

and characteristics concerning business or profession. The heart line deals with the affections. The fate line tells of successes, failures, changes, and events of the future. The line of Apollo deals with the gain or loss of riches, etc. The right hand tells why success or failure has come, the use or abuse of one's talents, the development of character, how hereditary tendencies have been checked or encouraged, and what may be expected in the future. The left hand shows inherited gifts and tendencies, the illnesses, accidents, and events that are passed.

The mounts deal with the character and denote courage, imagination, pride, benevolence, love of art, etc., which are present or absent according to the size and placing of the various mounts. The nails, according to shape and size, tell of the temper, and also the state of health. The hands are divided roughly into three types, pointed, square, and spatulate. A hand with few lines clearly marked and of good colour is considered a fortunate hand; a hand with numerous lines and marks is considered unfortunate.

Palmite Rush (*Prionium palmita*). Perennial plant of the natural order Juncaceae. It is a native of S. Africa, growing in swamps and rivers, frequently choking the latter. Unlike other rushes, it forms a trunk-like stem five to ten ft. long, which is partly submerged. From the top of this springs a cluster of sword-shaped leaves, which are an inch broad at the base. The greenish-yellow, rush-like flowers rise from the centre of the leaf-tuft in a cluster several ft. long. The leaves are used for thatching, and contain strong fibres, those from the lower part being used for making brushes, and as a substitute for horsehair stuffing.

Palmitic Acid. One of the fatty acids, to which the chemical formula $C_{15}H_{31}CO_2H$ is assigned. It was called palmitic acid by its discoverer Heintz in 1852, because it is obtained in large quantities from palm oil, in which it occurs as palmitin. Palmitic acid occurs in other vegetable and animal fats, but palm oil is the best source. It is prepared by boiling palm oil with caustic potash, decomposing the soap thus formed by sulphuric acid, and purifying the palmitic acid by recrystallisation from alcohol.

Palm-nut Cake. Artificial feeding stuff. It is made from the kernels of the palm nut (*Elaeis guineensis*) after the oil has been extracted. It is also on sale in the form of meal. It is a product of tropical W. Africa.

Palm Oil. Oil extracted from the fruit of several species of palm. The kernels are removed, the fruit boiled, and the oil skimmed from the liquid, which has a dark orange colour, the consistency of butter, and an odour like violets when fresh. It is composed of tripalmitin and olein and melts at 27° , being soluble in ether and turpentine. It is largely used in the manufacture of candles and soap, and in the preparation of toilet requisites.

Palm Sunday. Sunday before Easter. On this day the Christian churches celebrate Christ's entry into Jerusalem, when the multitude strewed palm leaves and branches, emblems of victory and rejoicing, on the way (John 12). Also known as Flower Sunday (Lat. *Pascha Floridum*), the day is mentioned as early as the 4th century. In the R.C. Church it is celebrated by the blessing and distribution of palm or olive branches, and a procession. There is a procession in the Greek Church on this day. The Church of England abandoned the ceremony in 1549, but the custom of decking churches with willow sprigs survives, and in 1871 Luke xix, 28-48, was appointed as second lesson for



Diagram of left hand, illustrating principal lines and significant parts. Fingers—A, Jupiter; B, Saturn; C, Apollo; and D, Mercury—have each 3 phalanges, numbered 1, 2, and 3. On the hand: 1, 2, 3, and 4 are mounts of Jupiter, Saturn, Apollo, and Mercury respectively; 5, mount of Luna; 6, mount of Venus; 7, mount of Mars. Principal lines are: E E, Life; F F, Head; G G, Heart; H H, Fate; X X, Apollo

fingers are called mounts, and take their names from the fingers under which they occur. Fingers are divided into three divisions called phalanges, the thumb into two.

The principal lines on the palm are named life line, head line, heart line, fate line, and line of Apollo. From the life line is judged length of life, etc. From the head line are judged intellectual qualities



Palmite Rush. Leaf cluster, with rush-like flower shown, on right, enlarged

evensong. Florida, U.S.A., owes its name to its discovery on Palm Sunday, 1512.

Palmyra. Ancient city of Syria. It stood about 150 m. N.E. of Damascus. According to 2 Chron. viii, 4, Tadmor, as it was at first called, was founded by Solomon. Under the Roman empire it became a great commercial centre, owing to its position on the trade routes between east and west. Its ruler Odenathus, c. A.D. 260, made it virtually independent of Rome. His widow, Zenobia, c. A.D. 273, had more ambitious designs and sought to create an independent empire embracing all Syria, Asia, and Egypt. She was defeated, however, by the emperor Aurelian,

and Palmyra subsequently fell into decay. It is now deserted, but some splendid ruins, of the late Roman period, still testify to its former greatness. The city, surrounded by walls of the age of Justinian, is intersected by a street with a quadruple colonnade and an imposing triumphal arch. There are sepulchral towers, and among the temples the greatest is that of the Sun, in a vast pillared enclosure.

Palmyra Palm (*Borassus flabelliformis*). Tree of the natural order Palmae, native of India. It has large fan-shaped, plaited leaves split at the edges. With the spiny leaf-stalk included, each leaf is eight or ten ft. long. Each tree bears flowers of one sex only—the males in branching catkins, the females in unbranched spikes. The three-seeded brown fruits are each as large as a child's head, produced in clusters of 15 or 20. From the unexpanded flower-spikes palm-



Palmyra Palm. Foliage and fruit of the Indian tree

wine is obtained in quantity, which is evaporated into jaggery, or palm sugar, fermented into toddy and vinegar, and distilled to produce arrack. The trunks of old trees yield hard and durable timber; and the leaves serve a variety of useful purposes, including matting, basket-making, hats, umbrellas, fans, and thatch. Seedling plants are used as food, and the pulp of the fruit furnishes a kind of jelly.

Palni. Range of hills in Madras presidency, India. It lies N.E. of the N. end of the Cardamom Mts. and culminates in Vembadi Shola, 8,218 ft. high.

Palo Alto. City of California, U.S.A., in Santa Clara co. It is 29 m. by rly. S.S.E. of San Francisco, and is served by the Southern Pacific Rly. It is the seat of the Leland Stanford Junior University (*q.v.*). Agriculture and fruit-farming are local industries. Palo Alto was settled in 1890, incorporated in 1894, and chartered as a city in 1909. Pop. 5,900.

Palos OR **PALOS DE LA FRONTERA**. Town of Spain. It is in Huelva prov., near the S.W. frontier, close



Palmyra. Ruins of the ancient city in the Syrian desert, with part of the great Temple of the Sun, or Baal

to the estuary of the Rio Tinto, 5 m. from the Atlantic Ocean. From here Columbus sailed, Aug. 3, 1492, on his historic voyage, and here Cortés landed in 1528, after his conquest of Mexico. Pop. 1,600.

Palpitation. Violent throbbing of the heart. It may be due to disorder of the heart, indigestion, excessive smoking, violent exercise, alcoholism, the taking of too much tea or coffee, or strong emotion, such as fear or anger. Treatment depends upon the underlying cause. As a rule the symptom is not one which gives occasion for anxiety. See Heart.

Palstave (Icel. *palstafr*, spud-staff). Winged celt, with the haft-end thinned for fitting into a split wood or horn handle. It originated in the Bronze Age, preceding the socketed celt (*q.v.*). Some forms have one or two side-loops for cording diagonally to the handle.

Palwal. Town of the Punjab, India, in Gurgaon dist. It is 30 m. S.E. of Gurgaon, and is reputed to have been restored by Vikramaditya in 57 B.C. It contains an early Mahomedan mosque, and is a grain market. Pop. 9,500.

Pamban. Passage connecting the Gulf of Manaar with Palk Bay, Madras, India. It is 1,350 yds. wide, and is crossed by a rly. viaduct from the mainland to the island sometimes known as Pamban, but also as Rameswaram (*q.v.*).

Pamela. Novel by Samuel Richardson, first published, 1741–42, with the title of *Pamela, or Virtue Rewarded*. The author ascribed the genesis of the book to fellow booksellers having asked him to write a little volume of a common style that should give to country readers useful models of familiar letters. The two or three letters, which were to be devoted to instructing handsome girls, going out to service, how to avoid the snares that might be laid against their virtue, grew into a lengthy epistolary story, which not

only had extraordinary popularity, but set the fashion of the sentimental novel. The story marked at the time a welcome break with the tedious travel romances of the early 18th century. See Novel.

Pamiers. City of Franco. It stands on the Ariège, in the department of Ariège, 40 m. from Toulouse. The chief buildings are the cathedral, which has been modernised, and the Romanesque church of Notre Dame. The site of the castle is occupied by a public promenade. The industries include ironworking, tanning, brick-making, and sawing. The city is an agricultural centre, and around are vineyards and nursery gardens. Pamiers grew up around a castle built in the 12th century by a count of Foix. There was an abbey here, and much friction was caused by the conflicting authorities of the count of Foix, the bishop, and the abbot. Pop. 10,000.

Pamir OR **ROOF OF THE WORLD**. Greatest mountain knot in the world. It occurs in the N.W. of India, where the plains of N. India approach most closely to the plains of Siberia. From it radiate the Kwenlun, Karakoram, and Himalaya, Suleiman, Hindu Kush and Paropamisus, and Thian Shan ranges. Comprising a series of ridges of elevation, varying from 16,000 ft. to 18,000 ft., with elevated valleys or pamirs between them, this great highland is almost without vegetation. Politically the greater part belongs to Asiatic Russia. The sparse pop. consists of Kirghiz.

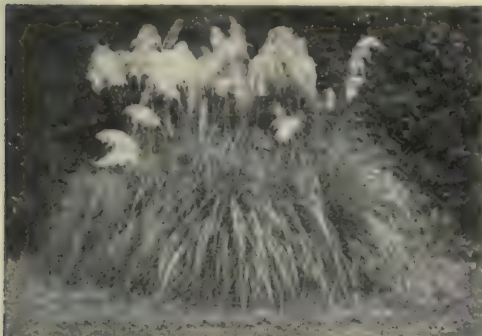
Pamlico Sound. Body of water on the N. coast of Carolina, U.S.A. The largest of the many lagoons on the E. coast of the U.S.A., it is separated from the Atlantic by a long, narrow strip of land, with 3 navigable inlets, and measures about 60 m. by 25 m. Oyster fishing is extensively carried on.

Pampa Central. Territory of Argentina. Entirely inland, W. of the prov. of Buenos Aires, N. of the territory of Rio Negro, it is true pampa country crossed by the Colorado and Salado rivers. Rlys. from Bahia Blanca cross the S. and N.E. of the state. Agriculture occupies most of the people, wheat, alfalfa, maize, and linseed being exported in large quantities; while there are large numbers of

cattle and sheep. Toay, or Santa Rosa de Toay, is the centre of administration. Area, 56,320 sq. m. Pop. 99,000.

Pampas. Temperate grasslands of S. America, situated W. of the Paraná river and E. of the Andes. They support vast numbers of cattle and sheep, and produce enormous quantities of wheat for export. See Argentina; Steppes.

Pampas Grass (*Oxyerium argenteum*). Noble grass of the natural order Gramineae. It is a



Pampas Grass. Tuft of the South American grass

native of S. America, where it grows on the pampas. It forms a tuft five or six feet in diameter, its long, slender, arching leaves being about six ft. long. The flowers form large, dense, silky, and silvery-white plumes rising to a height of 10 or 12 ft., bearing 40 or 50 plumes.

Pampas Indians. Collective term for the S. American Indians upon the Argentine plains. In the N. they were largely of Guaycuru and Guarani stocks. On the true pampas they mingled with the Araucanian Puelche. Usually unclad, they were predatory and warlike, becoming eventually better riders than the Gauchos. They migrated beyond the Rio Negro in 1881. See American Indians.

Pampero. Cold, squally, S. or S.W. wind experienced in Argentina and Uruguay in the neighbourhood of the Rio de la Plata. It appears to be a wind blowing over the pampas in the rear of a cyclonic system of low pressure.

Pamphlet. Treatise of short or moderate length, usually unbound and of small format, and generally dealing with matters of current public interest. In a technical sense, a pamphlet is a printed work with eight or more pages of matter, the whole not exceeding five sheets.

The derivation of the word is obscure, some authorities claiming that it comes from Pamphilus or Pamphila, a Latin poem which circulated widely in medieval

times. From the time of the Reformation the pamphlet has been of considerable historic importance and often exercised much political, ecclesiastical, and social influence. Wycliffe, Erasmus, Luther, and Calvin used it, and the Civil War in England produced an astonishing crop of controversial works in pamphlet form, many, such as those of John Milton, of great interest. One of the most celebrated collections is that of Civil War pamphlets in the British Museum, numbering over 22,000.

Defoe, Swift, William Law, "Junius," and Newman represent various aspects of pamphlet-writing. Periods of war and revolution bring the pamphlet into active life, e.g. 1789-1815, 1848, 1914-18. See Broadsheet; Newspaper; Pasquinade; Tract.

Pamphylia

(Gr., land of all tribes). Ancient region on the S. coast of Asia Minor, between Lycia on the W. and Cilicia on the E. Its inhabitants were of mixed race, partly Semitic and Greek. Pamphylia belonged successively to the Persian and Macedonian empires and to the kingdom of Syria and of Pergamum, from which, in 133 B.C., it passed to Rome.

Pamplona. City of Spain, capital of the prov. of Navarre. It is 16 m. from the French frontier, among the foothills of the W. Pyrenees, on the Arga, a tributary of the Aragon, 195 m. N.E. of Madrid. It is a rly. centre for the prov. The Gothic cathedral was built in 1397 over the ruins of the earlier edifice of 1100. The Cortes of Navarre met in the Sala Preciosa. The bull-ring seats 8,000.

It was rebuilt by Pompey in 68 B.C., taken from the Romans, sacked by Charlemagne, unsuccessfully attacked by Moors and Castilians, blockaded by Wellington, and besieged by Carlists. Pop. 31,000.

Pamplona. City of Colombia, in the dept. of Santander. It is 40 m. S. o Cucuta near the Venezuelan frontier. Founded by

the Spaniards in 1549, it was, for a time, a valuable source of gold. It is the see of a bishop. Pop. 20,000.

Pan. In Greek mythology, the god of shepherds. Generally regarded as the son of Hermes, and especially associated with Arcadia, he was of monstrous appearance, with the horns and legs of a goat. He was the inventor of the flute, or shepherd's pipe, which he made from reeds, after the nymph Syrinx, whom he had pursued, had at her own request been turned into a reed by the gods. The sudden apparition of Pan to travellers caused terror, whence the word panic. The legendary representation of the devil is a memory of Pan and similar beings.

Panaetius. Stoic philosopher of the 2nd century B.C. A native of Rhodes, educated at Pergamum and Athens, he came to Rome, and was there admitted to the friendship of Laelius and Scipio the Younger, with whom he went to Egypt and Asia, afterwards becoming the foremost teacher of Greek philosophy in Rome and in Athens.

Panama. Republic of Central America, formerly a dept. of the republic of Colombia. The separation arose in 1903



Panama Republic arms

from the exigencies of the situation regarding the Panama Canal; independence was asserted on Nov. 3, and the govt. was recognized by the U.S.A. and other powers. By the 18th of the month the treaty which provided for the construction of the canal was signed by Panama and the U.S.A. The constitution, adopted in 1904 and amended in 1918, is based upon an elected president and an elected chamber of deputies.

The state occupies the narrowest portion of the connecting link between N. and S. America, and lies in



Pamplona, Spain. Capuchin Monastery on the banks of the Arga, near Pamplona

a curve E. and W. between the Caribbean Sea to the N. and the Pacific Ocean on the S. The interior is elevated; in the W. the Cordillera de Veragua is drained by short rapid streams to both coasts; in the E. the Cordillera de



Panama flag, white with right corner red, left corner blue

Darien and the Sierra Canaza are coastal ranges with a depression, occupied by the rivers Chepo and Chacunaque, between them. The peninsula of Azuero projects into the Pacific Ocean.

The people are a mixed race of Spanish, Indian, and negro origin; they are chiefly cattle rearers for the markets of the Canal Zone. Numerous small ports facilitate communication. With an abundant rainfall and fertile soil, tropical crops should yield well, but more than half the land is unoccupied and the remainder is inadequately cultivated. The chief crop is bananas, and small amounts of coffee, cocoa, and rubber are produced on plantations. Mahogany is obtained from the forests. The area is 32,380 sq. m. Pop. 450,000. See Central America.

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Panama. Capital of the republic of Panama. It is situated within the Canal Zone at the head of the Gulf of Panama, and extends W. and N. from a small peninsula which is entirely within the city. It is the chief Pacific port at the S. end of the Panama Canal and is connected by rly. with Colon at the Atlantic end. It includes the harbour of Balboa (*q.v.*), formerly called Ancon, where ex-

tensive harbour works have been constructed. It has a fine cathedral, a national university, government and municipal buildings; the church of S. Philip dates from 1688. Panama was built by the pirate Morgan in 1671, after he had sacked the old town, 5 m. to the N.E., which was founded in 1519. Pop. 50,000.

Panama, GULF OF. Large inlet of the Pacific Ocean in Panama. It lies between the peninsula of Azuero and the S.E. littoral of the republic, and is 140 m. wide at its mouth. At its head, some 120 m. N. of the mouth, is the entrance to the Panama Canal. In the N.E. are the Pearl Islands.

Panama, ISTHMUS OF. Narrow neck of land connecting N. and S. America. It lies E. and W., with



Panama Canal. Map of the waterway connecting the Atlantic and Pacific Oceans

Panama Canal, THE. Canal through the Isthmus of Panama, connecting the Caribbean Sea and the Pacific Ocean.

About the year 1520 navigators and officials in the West Indies and the Spanish Main became convinced that nature had provided no waterway through the isthmian narrowlands connecting the two great oceans. From that time projects began to be made for the construction of an artificial channel at some point along the isthmus. The opening of the Suez Canal, in 1869, was followed by activity at Panama. The French attempt to construct a canal under the auspices of the maker of the Suez Canal, Ferdinand de Lesseps, was a terrible failure, owing partly to financial extravagance and corruption, but partly also to insanitary conditions at the isthmus. The experiences of the Spanish war had impressed the United States with the necessity of a quicker water-communication between their Atlantic and Pacific coasts. In 1904 they acquired the rights and property of the New Panama Company, which had been "caretaking" at the isthmus since the bankruptcy of the old Lesseps company. They also obtained from the little republic of Panama a strip of land running across the isthmus, five miles wide, on either side of the proposed waterway, and known as the Canal Zone.

The two most important natural features of the narrowlands of Panama are the Chagres river and the Culebra mountains. The former



Panama, Central America. Ruins of the old cathedral, looted and burned by Morgan, the pirate; top, right, façade of the present cathedral

the Gulf of Panama on the Pacific side and the Gulf of Darien on the Atlantic side. Columbus landed on the isthmus in 1502, and here Balboa was the first European to see the Pacific Ocean. It averages 70 m. across, but is 32 m. at its narrowest. See Darien.

is a stream, often swelling to a torrent, running right across the route of the proposed canal, and the latter runs down the isthmus near the Pacific coast, interposing a barrier which would have to be cut. There were two possible courses open to them. The French chose the tide-level principle, but the Americans decided for a high-level waterway.

Near the Caribbean outlet of the Chagres river they built a huge earthwork, called the Gatun Dam, right across the channel of the stream, and another dam about 20 m. S.E. at Gamboa. Behind these dams and held up elsewhere by the conformation of the country, the waters of the Chagres were allowed to accumulate until a lake was formed, 164 sq. m. in extent and at an alt. of 85 ft. The channel of the canal runs for about 30 m. through the lake, up to the surface of which ships are lifted by stupendous locks at either end.

The channel of the canal begins about 4½ m. out to sea in Limon Bay in the Caribbean at a depth of 41 ft. Through the sea and the shore it runs for 8 m. till it reaches the first locks, the gigantic three-stepped, two-flighted stairway at Gatun. These locks lift the ship on

to the surface of the Gatun lake. 20 m. farther on the channel is compressed into the Culebra cutting, which runs to the Pedro Miguel lock at the other extremity of the 85-ft.-above-sea-level section. Coming from the Caribbean the vessel drops down this lock by 30 ft. to the little Miraflores lake at 55 ft. above sea level, from which the Miraflores locks in two steps drop it down to the sea-level salt-water stretch of 8 m. on the Pacific side.

Roughly estimated, the canal, with its fortifications, cost 100 million pounds sterling, as against 19 millions for the Suez Canal. Its minimum width is 300 ft. at the bottom, and minimum depth 41 ft.

An important result for the British Empire is the change in comparative distances between England and Australasia and New York and Australasia. Henceforth New York, and not Liverpool, will be nearer to Yokohama, Sydney, and Mel-

vessels, excluding canal vessels and launches. See Balboa; Colon; Culebra; Dredging; Hay, John; Lock.

J. Saxon Mills

Bibliography. The Panama Canal: J. Saxon Mills, 1913; The Panama Canal, F. J. Haskins, 1914; The Panama Canal: an engineering treatise, G. W. Goethals, 1914; The Panama Gateway, J. B. Bishop, 1918.

Panama Hat. Light hat which can be folded without injury. It is made from the young leaf of a palm, the *Carludovicia palmata*, which grows in Central America, chiefly in Ecuador and Colombia, where the hat was exclusively manufactured. The leaf is, however, now imported into Europe. See Hat.

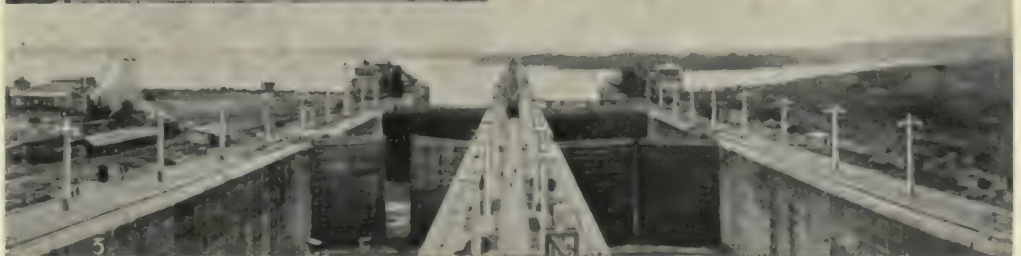
Pan-American Conference. Name given to a meeting of representatives of the republics of N. and S. America. The first, held at Washington, 1889-90, was the outcome of years of effort to further the sense of community of interest



bourne. The canal completed, an agitation arose in the U.S.A. for the exemption of its coastwise shipping from the dues, and in Oct., 1921, a bill to effect that end passed the Senate. In 1919 there passed through the canal 2,029

among the states of the American continent. It was followed by conferences at Mexico City, 1901-2; Rio de Janeiro, 1906; and Buenos Aires, 1910. Among the subjects discussed were uniformity of weights and measures, international arbitration, patents, and copyrights.

Pan-Anglican Congress. Assembly of churchmen from various parts of the world which met in London in July and Aug., 1908. See Lambeth Conference.



Panama Canal. 1. Gatun Lock, showing a vessel being towed by electrically driven haulers on bank. 2. Gatun Lock from the lake, looking toward Limon Bay. 3. Upper flight of Gatun Lock, during construction

Panathenaea. Festival of ancient Athens. It was held annually in Aug. in honour of Athena. Every fourth year the festival was celebrated on a splendid scale; it was then called the greater Panathenaea, the intervening festivals being known as the lesser Panathenaea. The festival, of legendary origin, had grown by the time of Pericles to great dimensions, and included musical and athletic contests. The great religious feature, a procession symbolising the power of Athens, is represented in the frieze on the Parthenon. See Athena.

Panay. Fifth in size of the Philippine Islands. The extreme W. island of the Visayan group, it lies between Negros and Mindoro islands, and covers an area of 4,610 sq. m., or with adjacent islands an additional 300 sq. m. Panay has a mountainous surface, ranges extending from the centre to its three corners, with peaks exceeding 5,000 ft., Madias, the culminating summit, being 7,265 ft. The N. and E. coasts are well indented, and contain several good harbours, Iloilo being one of the finest in the Philippines. The principal rivers are the Jalaur and Jaro. Agriculture is the chief industry, and rice, sugar, and copra are extensively cultivated. Pineapples, bananas, and mangoes are grown.

In 1569 the Spaniard, Legaspi, conquered Panay from his first base at Cebu. From the headquarters he established at Iloilo he proceeded to the conquest of Mindoro and Luzon. Pop. 775,000.

Pancake. Thin, flat cake fried in butter or fat. It is made of a thin batter, turned in the pan by tossing. The origin of eating pancakes on Shrove Tuesday, the day before Lent, is a survival of the old custom of feasting on that day, pancakes being fried in the grease that was forbidden in Lent. For 300 years past a ceremony known as tossing the pancake has been enacted at Westminster School on Shrove Tuesday, the boys scrambling for it and the successful one receiving a guinea from the dean.

Panchatantra (Skt., Five Books). Oldest known collection of fables. It is the origin of the Fables of Bidpai (q.v.) and one of the sources of the Hitopadesa (q.v.) or Book of Good Counsels. A work in five tantras or sections, it derives from a treatise in which the ancient Brahmans of India inserted the choicest treasures of worldly wisdom and the most perfect rules for government, and then presented them to their rajas. Written in Sanskrit, the Panchatantra has been rendered into the chief languages of Asia and Europe.

Panchayat. Name given to the committee that manages the affairs of an Indian village. In some cases it consists of the heads of the various households; in others of a fixed number of persons chosen by their fellows. See Village Community.

Panch Mahals (Five Districts). Dist. of India, in the N. division of Bombay. It is a small district, area 1,606 sq. m., bounded W. by the Mahi river. The annual rainfall is 38 ins. Rice and pulses are grown, and native food grains occupy half the tilled area. It has been British since 1853. Godhra is the chief town. Pop. 323,000.

Pancorbo. Village of Spain, in Burgos prov. It is 124 m. S.W. of Irun and 10 m. S. of Miranda, on the Ebro. It has two ruined castles, and gives its name to the Garganta or gorge of Pancorbo, a rocky ravine in the outlying spurs of the Pyrenees, leading to Castile.

Pancras. Patron saint of children. He is said traditionally to have been born at Synnada, in Phrygia, of noble parentage, and to have been taken in childhood to Rome, where he was baptized by the pope. During Diocletian's persecution he was asked by the emperor to give up Christianity, and on his refusing was beheaded at the age of 14. Numerous churches and one London borough are named after him. See S. Pancras.

Pancratium (Gr. *pan*, all; *kratos*, strength). Event in the Olympic and other games of ancient Greece. The term means a "complete" contest, wrestling and boxing combined. It was a trial of strength in which the two unarmed competitors were at liberty to use any means, even strangulation, to overcome one another. See Ludi.

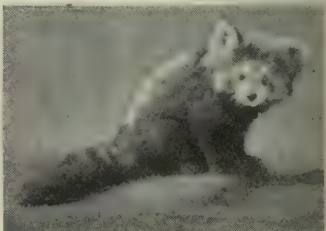
Pancratium. Genus of bulbous herbs of the natural order Amarillidaceae. Natives of the Mediterranean region, the Canaries, and W. Indies, they have strap-shaped leaves and large funnel-shaped, fragrant white flowers, mostly forming a large umbel, on a tall stem. The best known species are *P. illyricum* and *P. maritimum*, both natives of S. Europe.

Pancreas. Organ situated behind the stomach. About 6 to 8 ins. long, it contains a duct which

opens into the second part of the duodenum in contact with the common bile duct. The pancreas secretes a juice which plays an important part in the digestion of food. It contains four enzymes or ferments, namely trypsin, which splits up the proteins of the food; amylase, which converts starch into maltose, a form of sugar; lipase, which splits up fats; and an enzyme which causes milk to curdle. The pancreas of sheep is called sweetbread (q.v.).

Pancsova. Town of Yugo-Slavia, in the S. of the Banat. It stands 3 m. N. of the confluence of the Temes with the Danube, here 1½ m. wide. Silks, bricks, and flour are manufactured. The trade is in grain and pigs. Pop. 21,000.

Panda OR WAH (*Ailuurus fulgens*). Small mammal of the order Carnivora. It is a native of the



Panda. Small Himalayan cat-bear allied to the racoons
W. S. Berridge, F.Z.S.

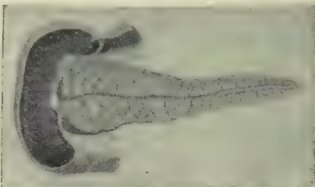
Himalayas only. Allied to the racoons, it resembles the kinkajou (q.v.) in having the claws partially retractile. Its total length is about 2½ ft., but somewhat more than half this measurement is due to the long



Pandanaceae. Leaves of the Screw Pine, *P. utilis*

bushy tail, which has suggested the alternative name of cat-bear. Its fine, dense coat of fur is chestnut-brown above and black beneath. Mainly nocturnal and arboreal in habits, it is found on the outskirts of the pine-woods.

Pandanaceae. Natural order of trees and shrubs. Natives of the tropics, mainly of the Old World, they have long, narrow, rigid leaves,



Pancreas. The organ shown in section

the bases of the older ones sheathing the younger. The small flowers are in crowded clusters, the two sexes on separate plants. There are only two genera, *Freycinetia*, consisting of climbing shrubs, and *Pandanus*, the screw pine.

Pandarus. In Greek legend, a Lycian archer, who fought for Troy and was slain by Diomedes. From the part he plays as a go-between in the story of Troilus and Cressida as told by Boccaccio, Chaucer, and Shakespeare is derived the word pander.

Pandean Pipes OR **PAN'S PIPES.** Simple musical instrument of extreme antiquity. It consists of a row of tubes, stopped at their lower ends and bound together, and blown across their tops by the performer. The number of tubes has varied, and the larger instruments are capable of considerable effects, though in England they are chiefly associated with the simple strains of Punch and Judy shows. See Greek Art.

Pandect (Gr. *pandektēs*, all-receiver; *pan*, all; *dekhesthai*, to receive). Term apparently first applied to an encyclopedic work. In the plural, it is specially used of the Digest or analysis of the works and legal opinions of the classical Roman juriconsults, the chief of whom were Papinian and Ulpian, which had been approved by earlier emperors. This Digest was in 50 books, and was compiled at the instance of the emperor Justinian. With the Institutes and the Codex the Pandects formed the Corpus Juris Civilis, a complete system of Roman civil law. See Roman Law.

Pandharpur. Town of India, in Sholapur dist., Bombay province. It is on the Bhima, a tributary of the Kistna, 84 m. E. of Satara. Thousands of pilgrims visit the temple of Vithoba. Pop. 28,600.

P. & O. Abbreviation for Peninsular and Oriental Steam Navigation Company (*q.v.*).

Pandora (Gr., all-gifted). In Greek mythology, the first woman on earth, made from clay by the god Hephaestus at the command of Zeus, who desired to avenge himself on Prometheus (*q.v.*). The gods were so pleased with the result of the skill of Hephaestus that they vied with each other in endowing her with various physical and mental gifts. Pandora became the wife of Epimetheus, brother of Prometheus. In his house was a box which he had been forbidden to open, but Pandora, overcome by curiosity, opened the box, and let out all the evils that afflict mankind. She shut the box, however, in time to prevent the escape of Hope. See Flaxman.

Pandour. Term formerly used to designate members of a body of Austrian infantry, first recruited near the village of Pandur, in S. Hungary. They were noted for their savage methods of warfare. The word is extended to indicate robbers and marauders. The nobility in Croatia and Slavonia employ armed servants, who are known by the same name, which is sometimes spelt Pandoor. See Through Savage Europe, H. de Windt, 1907.

Pandulf (d. 1226). Papal legate. Of Roman birth, he early entered the service of Innocent III and first appeared in England, on a mission from the pope, in 1211. On his next visit, in 1213, John made complete submission to the pope, and at Runnymede Pandulf took the king's side, repudiating Magna Carta, and ordered the suspension of Langton, Sept., 1215, for refusing to carry out the papal sentences. In the same year he was elected bishop of Norwich. Promoted to the office of papal legate in 1218, Pandulf soon became the virtual ruler of England. In 1221 he was back in Rome, where Honorius III consecrated him bishop of Norwich, and he died in Rome, Sept. 16, 1226. His body was brought to Norwich and buried in the cathedral.

Pandya. Former division of India, the ancient Pandion. It was one of the three great divisions of Dravidian India, and comprised the area S. of Madura, the modern Tinnevely dist. It included the sacred island of Rameswaram.

Panel (Old Fr., a little sheet). In English law, the list of jurors returned by the sheriff to serve at a trial. Hence a jury is said to be empanelled. In Scots law, the accused in a criminal trial is called the panel. The word is also used for any list of names from which a choice can be made; for instance, a panel of doctors under the Health Insurance Act in Great Britain, or a panel of employers or employed empowered to act as arbitrators in labour disputes.

Panelling. Covering of a surface in a building, such as a wall, door, or ceiling, with panels, i.e. raised or sunk compartments, generally framed at the edges. Ordinarily the material is wood, stone, or plaster, the division of a plaster ceiling by breaking it up into panels being a favourite method of decoration. Wood-panelling, as a mural decoration, was introduced into England in the 15th century.

In Elizabethan and Jacobean work the small wood panel appears, sometimes with an inlay of coloured wood, and with gradually in-

creasing elaboration of the mouldings of its frame. Ceiling plaster panels become correspondingly rich. The size of wood panels was greatly increased after the middle of the 17th century, developing during its latter part into the long oblong of the Palladian style, with very much bolder mouldings. The Italians of the Renaissance panelled both the inside and outside of their buildings with stone or marble, and the use of these materials was adopted sometimes by Christopher Wren (*q.v.*) in England. The classic taste of Robert Adam reduced the panel in the 18th century to more reasonable proportions, especially in the treatment of doors; the moulding was simplified, and it became the fashion to paint panels a white or cream colour. See Ceiling; Gibbons, Grinling; Mahomedan Art; Mural Decoration.

Pangani. Dist., river, and town of E. Africa, in Tanganyika Territory. The dist. lies S. of the Tanga and Wilhelmstal districts and N. of the Bagamoyo district, and borders on the E. upon the Indian Ocean. The town is situated at the mouth of the river and has a considerable maritime trade. It was occupied by a British naval force in August, 1916. The river is navigable over considerable distances for small craft. Pangani is also the name of two Falls, one on the Pangani, and the other on the Rufiji river, below its junction with the Ruaha.

Pangbourne. Village of Berkshire, England. It stands on the Thames, 5 m. from Reading, with a station on the G.W. Rly. A small stream, the Pang, here falls into the Thames. The church is dedicated to S. James. In 1917 a college for training boys to become officers in the mercantile marine was opened here. Pop. 2,000.

Pange Lingua (Lat. *pangere*, to record; *lingua*, tongue). First words, used as the name, of a Latin hymn in honour of the Holy Eucharist. Composed by S. Thomas Aquinas, it begins, *Pange, lingua, gloriosi corporis mysterium* (Now, my tongue, the mystery telling Of the glorious body, sing), and was appointed for the feast of Corpus Christi in the Sarum, Hereford, York, Aberdeen, and Paris breviaries. It was translated into English by E. Caswall and J. M. Neale. See Aquinas, Thomas; Corpus Christi; Tantum Ergo.

Pangenesi (Gr. *pan*, all; *genesis*, generation). Theory of heredity formulated by Darwin in 1868 as a provisional hypothesis. It endeavoured to satisfy the claims of the doctrine of Lamarck to the effect that acquired characters

were transmitted to offspring. It was an effort to understand how characters could be continued from one generation to another. Darwin supposed that the cells composing the tissues of the body gave off minute portions of themselves—"gemmules," he termed them—and that these found their way to the germinal area and constituted the germ-plasm from which the next generation was to spring. The discovery of the actual continuity of germ-plasm rendered this hypothesis unnecessary. See Evolution; Heredity.

Pan-Germanism (Ger. *All-deutschtum*). German political movement. The agitation for the cooperation and ultimate political union of the German populations living under different governments took definite shape through the foundation of the Pan-German Union (*Alldeutscher Verband*) in 1891. Its press organ was *All-deutsche Blätter*. Based on the ideas of Treitschke (*q.v.*), H. S. Chamberlain (*q.v.*), and others, it was mainly the work of chauvinistic professors and literary men.

Aided by anti-Semites, militarists, and the advocates of colonial and naval expansion, the Pan-Germans aimed primarily at fostering the sense of German nationality in German Austria, the German districts of Bohemia, Transylvania, and Switzerland, and in parts of America, especially S. Brazil, and at maintaining German culture in the Baltic provinces of Russia, with a view to the eventual incorporation of these districts in the German empire. They endeavoured further to arouse a sense of racial solidarity with Germany in the other Teutonic peoples of the Continent, in Holland, Flanders, and Scandinavia, as well as in S. Africa. After the Austrian revolution of 1918 the Great-Germans, a Pan-German party advocating union with Germany, formed one of the three chief parties in the Austrian parliament.

Pangolin (*Manis*). Genus of edentate mammals, occurring in S. Asia and Africa. The pangolin is from two to three ft. long, and its body is somewhat like that of a lizard in shape. Except about the mouth and on the under parts, it is entirely covered with large horny scales; and the feet are provided with strong and powerful claws. No teeth are present, but there are horny ridges on the lower jaws; the tongue is long and wormlike, as in the anteaters. The pangolin rolls itself into a ball when disturbed.

The Asiatic pangolins, which comprise three species, live in cre-

vices of the rocks, and in long burrows terminating in a chamber sometimes as much as six ft. across. The animals are strictly nocturnal, and feed on termites. There are four species in Africa. They resemble the Asiatic species in habits, but have a curious method of resting on a tree-trunk by clinging with the hind feet and tail, while the body is thrown back till it is nearly horizontal.

Panick Grass (*Panicum*). Large genus of grasses of the natural order Gramineae. They

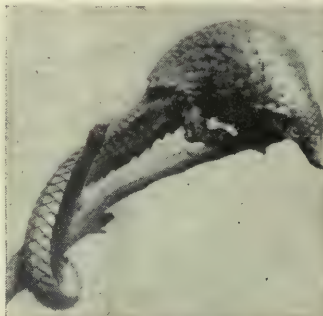


Panick Grass. Leaves and flower spray of *Panicum miliaceum*

are mostly natives of the tropics, but a few are widely distributed in temperate regions. The flowers are clustered in spikes or branching sprays. Many of the species are useful fodder grasses, and a few of them yield grains large enough for use as human food. *P. miliaceum*, which yields Indian millet or warree, is cultivated in S. Europe. *P. maximum* of the W. Indies attains a height of six to ten ft., and another large species is the Angola grass (*P. spectabile*) of Brazil. Several species are grown as ornamental grasses.

Panicle (Lat.). In botany, term denoting the arrangement of the flowers in a raceme or spray with branches, as in the oat. See Inflorescence.

Panin, NIKITA IVANOVITCH, COUNT (1718-83). Russian statesman. Born at St. Petersburg, Sept.



Pangolin. African species of the lizard-like mammal

26, 1718, he became a soldier and was attached to the imperial guard of the empress Elizabeth. Ambassador at Copenhagen, 1747, and later at Stockholm, he became governor to the young prince Paul Petrovitch, 1760, and after the accession of Catherine II was selected by her as her chief minister, 1763. His administration was responsible for the war with Turkey, and the exchange of Holstein for Oldenburg and Delmenhorst. Catherine made him a count in 1767, but later he lost influence with her. He died March 31, 1783.

Panipat. Town of the Punjab, India, in Karnal dist. It is situated N. of Delhi, a few m. W. of the Jumna. Decisive battles were fought here in 1526, when Babar (*q.v.*) triumphed; in 1556, when a victory placed Akbar on the throne of Delhi; and in 1761, when Ahmad Shah of Afghanistan defeated the Marathas. Pop. 26,300.

Panixer. Alpine pass in Switzerland. It connects cantons Glarus and Grisons over the Tödi range, and leads E. of the Hausstock from the valley of the Sernf to Panix on a small affluent of the Vorder Rhine. Its alt. is 7,897 ft. and the top is marked by two tablets which record the retreat, Oct. 5-10, 1799, of the Russians under Suvorov.

Panizzi, SIR ANTHONY (1797-1879). Anglo-Italian scholar. Born at Brescello, near Modena, Sept. 16, 1797, he was educated at Parma University, and practised as a lawyer, but, having joined the Carbonari, was arrested in 1822, and escaped to Eng-



land. He taught Italian at Liverpool, but in 1828 Brougham secured his appointment as professor of Italian in University College, London, and three years later he was made an assistant librarian at the British Museum, and in 1856 principal librarian. To him was due the organization of the reading-room and the great catalogue. He retired in 1866, was made K.C.B. in 1869, and died April 8, 1879. He edited the poems of Boiardo and Ariosto. See Life, L. A. Fagan, 1880.

Panjandrum. Nonsense word made up by S. Foote, and occurring in a fantastic composition intended as a memory test. A sentence frequently quoted is as follows: And there were present the Picinnies, and the Jobillies, and the Garyulies, and the Grand

Panjandrum himself, with the little round button at top. Hence the word came to be used by 19th century writers as a synonym for any pretender to undue importance or fussy local magnate.

Panjim. Alternative name for the Indo-Portuguese city of New Goa (q.v.).

Panka. Indian caste of weavers and cultivators, mostly in Bihar and Orissa, Central Provinces, and Madras prov. Numbering (1911) 796,973, including the Pan. Panika, and Pano, five-sixths are Kabirpanthis, followers of Kabir's 15th-century religious reformation.

Pankhurst, CHRISTABEL (b. 1880). British feminist. Daughter of Richard and Emmeline Pankhurst, she was educated at the High School for Girls and Victoria University, Manchester, where in 1906 she took the LL.B. Refused admission to Lincoln's Inn as a law student, she helped to organize the Women's Social and Political Union, and was imprisoned on several occasions. In 1912, she escaped to Paris, where she continued to direct the movement and edit its organ, *The Suffragette*. In 1914-15 she lectured in the U.S.A., and unsuccessfully contested Smethwick in 1918. She wrote *The Great Scourge and How to End It*, 1913, and her life story appeared serially in *The Weekly Dispatch*, 1921.

Pankhurst, EMMELINE. British feminist. Born in Manchester, daughter of Robert Goulden, she was educated in England and Paris. In 1879 she married Dr. Richard Marsden Pankhurst, a barrister, and with him helped to found the Women's Franchise League, 1889. She was a poor law guardian, and member of the school board, Manchester, and on her husband's death, in 1898, was appointed registrar of births, a post she held until 1900. In 1903 she founded the Women's Social and Political Union. When militant methods took the place of peaceful propaganda, Mrs. Pankhurst was held responsible for them, and she was several times imprisoned. She published *My Own Story*, 1914. See Franchise; Suffrage; Vote.

Pankhurst, SYLVIA (b. 1882). British socialist. Sister of Christabel Pankhurst (q.v.), and sharing in her family's agitation for woman suffrage, she lectured in the

U.S.A., 1911, in which year appeared *The Suffragette*, an account of the movement during 1905-10. Later she joined the extreme socialist party, and edited the *Workers' Dreadnought*. For publishing articles in it calculated to cause disaffection and sedition, she was sentenced to six months' imprisonment in 1921.

Panna. Native state and town of Central India, in Bundelkhand. It is adjacent to Banda and Jubbulpore British dist., and Kothi, and other native states. The town is 105 m. N.E. of Jubbulpore, and contains several modern Hindu temples. Formerly diamonds were mined in the locality. The area of the state is 2,492 sq. m. Pop., state, 193,000; town, 12,000.

Panne, LA. Town of Belgium, in the prov. of W. Flanders. It is $4\frac{1}{2}$ m. from Furnes, and is a noted bathing resort. During the Great War it was slightly damaged by German air raids, and here the king and queen of the Belgians lived during that period, the queen serving as a nursing sister in a field hospital. Pop. 4,300.

Panning. Process of recovering gold from sand or crushed ore by means of the pan, the most primitive mining appliance. The pan is a flat dish of almost any form; that used by the old Australian miners was flat-bottomed and of iron, but that used in many other parts, particularly in Central and South America, is slightly coned. It is a necessary part of a gold prospector's outfit. The miner puts into it some auriferous sand, the pay dirt, breaking up the lumps, and then he dips the pan under water, a gentle running stream by preference, and gives it a peculiar rotative, vibratory motion, by which the lighter dirt is washed over the lip, leaving the heavier grains carrying the gold in the bottom. See Gold; Mining.

Pannonia.

Province of the Roman empire. It lay between the Alps and the Danube, from a point above the modern Vienna to Belgrade, and embraced a large part of the present Austria, Hungary, and Yugo-Slavia. Its people, who seem to have been of Illyrian race, were first defeated, about 30 B.C., by Vibius,

one of the generals of Octavianus. They joined the great revolt of A.D. 7-9, which ended in the reduction of Pannonia to a Roman province. In 102 it was divided into two provinces, Upper and Lower Pannonia.

Panorama (Gr. *pan*, all; *horama*, sight). Term for a picture giving views of objects in all directions. A panoramic display, which was in a sense the predecessor of the cinematograph, was a picture representing a number of scenes which passed in succession before the audience. See Cinematography.

Panos. Family of S. American Indian tribes of allied speech. Mostly in the Pampa del Sacramento, Peru, they are a branch of the Caras, once dominant in Ecuador. They have dwindled into a small mission settlement.

Pans. In geology, hard layers formed by the consolidation of loose material at a depth of four or more inches below the surface of the soil. They interfere with drainage, and decrease fertility. A pan simply consisting of hardened clay is known as a plough sole, and may be caused by continuous ploughing of heavy land. In lighter soils the pan is formed by infiltration of various substances in solution, these being deposited and acting like cement. A distinction is thus made between moor-bed pan (organic cement), iron pan (ferric oxide), and limy pan (carbonate of lime). Pans require breaking up by subsoiling or deep ploughing.

Panshanger. Seat of Baron Queenborough, in Hertfordshire, England. It stands in a park of about 900 acres, between Hatfield and Ware, $1\frac{1}{2}$ m. from Cole Green station on the G.N.R. The house, begun by Peter, 3rd Earl Cowper, in 1801, and partly burned in 1855, is notable for its picture gallery. The park, famous for its timber, is watered by the Maran. It was the



Emmeline Pankhurst, British feminist

Elliott & Fry



Panshanger, Hertfordshire. South front of the country mansion of Baron Queenborough

seat of Earl Cowper until 1905; then it passed to Lady Desborough. It was later bought by Lord Queenborough. During the Great War German prisoners were interned here.

Panslavism. Movement to promote fraternity and cooperation between the Slavonic peoples. A common Slavonic consciousness hardly existed before the 19th century, but was promoted by the part played by Russia in defeating Napoleon I, and especially by the Russian occupation of Prague in 1813, when Czechs and Russians fraternised. In the following years the Slavs of Austria were drawn together by government oppression. Congresses were held at Prague in 1848 and at Moscow in 1867.

Russia's rôle as the protector and liberator of the Slavs was set forth by N. Danilovsky in his book, *Russia and Europe*, in 1869. She gained a strong following in the Balkans, but aroused the suspicion of the Bulgars, as well as of the liberal Panslavists of Central Europe, while the Poles throughout remained steadily hostile to the movement. Panslavism was also hampered by the antipathy between the Greek and Roman Churches and by many international jealousies. The Balkan League of 1912 was a short-lived triumph of Panslavism. A greater impetus was given by the alliance of all the Slav peoples—except the half-Turanian Bulgars—in the Great War, and the liberation of the Yugo-Slavs, Czechoslovaks, and Poles, but the Russian revolution caused new complications. See *Balkan League*; *Russia*; *Slav*.

Pansy (*Viola tricolor*). Perennial herb of the natural order Violaceae. It is a native of Europe, N. Africa, and N. and W. Asia. The leaves in general form are oblong, or lance-shaped, but variously lobed and cut. The flowers are purple, whitish, or yellow, or a varied mixture of the three colours. The number of named varieties is enormous, and every year sees additions. They do well in almost any garden soil, but the best results are obtained by planting deeply in a well-drained sandy loam, enriched with stable or cow manure. Special varieties can be propagated only by means of cuttings and divisions of the old plants, made at the end of the flowering season (Aug. or Sept.), and given slight protection during the winter. The word pansy is derived from the French *pensée*, thought. Alternative names are heartsease and love-in-idleness.

Pantagrue. Giant and king of the Dipsodes in Rabelais' *Life of Gargantua and the Heroic Deeds of Pantagrue*. He is the son of Gargantua, and his name is explained as signifying all-thirsty.

Pantaloon (Ital. *Pantaleone*, a saint popular in Venice). Ridiculous old Venetian bourgeois in the Italian comedy, or *Commedia dell'Arte* (q.v.). Sometimes he was an old bachelor, but generally he was married to an unfaithful young wife or was the father of troublesome young daughters. Columbine was very often his daughter, and Harlequin was sometimes his lackey. Lean and slippered, as Shakespeare called him, Pantaloon wore the skin-tight trousers all of one piece named after him, and a long gaberdine, originally red, but changed to black when Venice lost Negroponte, and the whole city put on mourning. In modern English pantomime he is a butt for the practical jokes of harlequin and clown. See *Columbine*; *Harlequin*; *Pantomime*.

Panteg or **PANTEAGUE**. Urban dist. of Monmouthshire, England. It is 2 m. from Pontypool, on the G.W. Rly. S. Mary's is the chief church. The inhabitants are largely employed in the ironworks and coal mines. Pop. 10,000.

Pantelleria. Volcanic island of the Mediterranean. Situated 60 m. from Sicily and 40 m. from N. Africa, it has an area of 32 sq. m., belongs to Italy, and is included within the Sicilian prov. of Trapani. It rises in an extinct crater, Montagna Grande, to 2,740 ft.; numerous fumaroles and hot

springs exist; in 1891 a submarine eruption occurred 3 m. to the N.W. Raisins and figs are produced, and fishing is engaged in. There is an Italian penal colony on the island. Round towers, known as Sesi, betoken a prehistoric population. It was colonised by the Phoenicians, and captured by Rome in 217 B.C. The Christian inhabitants were exterminated by the Arabs about 700. Pop. 10,000.



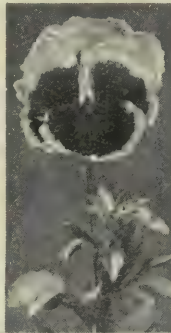
Pantaloon, in English pantomime

Panthay. Burmese name for Chinese Mahomedans, especially in Yunnan. Calling themselves Hui-hui, they are presumably descendants of medieval Tartar soldiery. Official oppression led in 1855 to a rebellion under Tu Wenhshui, who was proclaimed sultan, 1867, but overthrown, 1873. Panthay muleteers serve the caravan trade between Burma and China.

Pantheism (Gr. *pan*, all; *theos*, god). The doctrine which affirms the unity of the Deity with the world. Pantheism has received different names according to its attitude towards the relation of individual things to the absolute. Acosmism denies the existence of a universe as distinct from God; emanationism explains all things as flowing out from the Deity, of whom they form part; Krause's panentheism teaches that all things are in God.

A fundamental part of much ancient Indian philosophy, Pantheism appears in the Greek Eleatic and Neoplatonic systems, and in many Christian mystics from the so-called Dionysius the Areopagite onwards. It was taught by Bruno and other Italians of the Renaissance, and by many of the German Idealists. It is most completely developed in the philosophy of Spinoza. See *God*; *Spinoza*.

Pantheon (Gr. *pantheon*, belonging to all the gods). Temple in Rome, now a church. One of the most celebrated of ancient Roman buildings that still survive, it was built by Hadrian between A.D. 120-130. An early temple near the site was built by Agrippa in 27 B.C.,



Pansy. Flowers of common yellow pansy; top, two-coloured variety



as a memorial to the house of Caesar, and was burnt A.D. 80. The main structural parts of the Pantheon consist of a rotunda and a dome, the interior of the latter forming a perfect hemisphere, the total height and diameter of the building amounting to 142 ft. 6 ins. The portico of Corinthian columns supports a massive pediment (*q.v.*) surmounted by another partially screening the dome, which is constructed of solid concrete and lighted at the summit by an opening 27 ft. in diameter. Originally the dome was covered with tiles of gilded bronze, but these were removed by Constantine II, a leaden covering being substituted by Pope Gregory III. The interior is lined with marble. In 609 the Pantheon was consecrated by Boniface IV, and dedicated to S. Mary of the Martyrs. It contains the tombs and monuments of eminent Italians.

The Panthéon, Paris, a building in the Roman style, with a large portico and a dome, designed by Soufflot, was begun in 1764, and has been three times a church, dedicated to S. Geneviève, and three times, as now, a temple of honour to great Frenchmen, of whom Voltaire, Rousseau, and Hugo are buried in the crypt. *See* Architecture.

Panther (*Felis pardus*). Large and ferocious spotted cat. It is a native of Africa, S. Asia, Java, and Japan. About 7 ft. in length, its upper parts are yellow closely spotted with black, paling to white on the under surface. The spots vary in form from broken rings and ovals to short longitudinal bars and blotches. Generally known in India as the panther, in other parts of its distribution it is called leopard (*q.v.*).

Pantin. Town of France, in the dept. of Seine. An industrial suburb of Paris, it lies just outside the fortifications, 1 m. N.E. of the city. The Ourcq canal runs past

it, and the industries include rly. wagon factories, the making of chocolate, soap, preserves, and perfumery, distilleries, dye-works, and some stone quarries. Although an old town, mentioned as Penthinum in the 11th century, it has no noteworthy points of interest. Pop. 36,400.

B x, D y. The longer D *x* is relatively to D *y*, the greater will be the movements of C relatively to those of B. If the reproduction is to be larger than the original, a pencil is inserted at C and a tracing stylus at B; if smaller, the positions are reversed.

Pantomime. Art of acting without words, by gestures and facial expression only. Though practised in ancient Greece, it became more popular in Rome, where it had the great advantage of supplying an entertainment intelligible to the cosmopolitan crowd that lived there. Facial



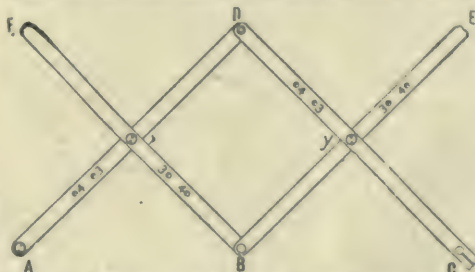
Pantheon, Rome. Interior of the Pantheon of Agrippa, now used as a church. Top, left, front of the building, showing portico of Corinthian columns

Pantograph. Instrument for copying designs on a larger or a reduced scale. Its principle is shown by the accompanying illustration. A D, D C and B F, B E are two pairs of rods of equal length, hinged together at D and B respectively, and attached by removable screws at *x* and *y*. The apparatus is secured to the board by a spike at A, about which it can be moved freely in any direction. All four rods have a series of holes in them, and by setting the screws in similarly-numbered holes the sides D *x*, B *y* of the parallelogram B *x* D *y* may be made equal to, longer than, or shorter than the sides

expression, however, was excluded in those days because of the masks worn by the performers—contrivances of bark, leather, or metal, lined with cloth, which covered the entire head. In the 17th and 18th centuries the word pantomime was applied in France to a kind of mythological ballet which was in great favour in Paris and at Versailles. Nowadays the word is seldom used in English, except in connexion with Christmas productions of the Jack and the Bean-stalk order, which have an immense vogue throughout the British Empire. The Harlequinade, formerly a distinctive feature of them, and usually concluding the

performance, is now often omitted. *See* Actor; Drama; Harlequin; Pantomime.

Paoli, PASQUALE (1725-1807). Corsican patriot. Born at Rostino, Corsica, April 25, 1725, the son of the Corsican leader, Giacinto Paoli (1702-68), he was educated



Pantograph for copying designs on different scales. *See* text

at Naples, where his father commanded a regiment of Corsican exiles. In 1755 Pasquale was

offered the supreme power in Corsica, where he consolidated the Corsicans by making vendettas unlawful, and provided a generous constitution. When, in 1768,

Corsica was ceded by Genoa to France, Paoli offered a fierce resistance, but he was compelled to leave the island with 350 followers on a British frigate, June 12, 1769. He settled in London, received a pension, and joined the circle of Dr. Johnson. By a vote of the National Assembly of France, Nov. 30, 1789, he was allowed to return to Corsica, which he again governed. He defied the French, and British troops were sent to his aid, in return for which he handed over the sovereignty of Corsica to George III. The British evacuated it in 1796. Paoli returned to London, 1795, and died there Feb. 5, 1807. See Corsica.



Pasquale Paoli,
Corsican patriot.

Paolo and Francesca (d. 1285). Lovers celebrated by Dante, who meets them in the second circle of Hell (*Inferno*, v). Giovanni Malatesta of Rimini, who was lame and ugly, received from the lord of Ravenna, as a reward for his military services, the hand of his beautiful daughter, Francesca (*q.v.*). She loved his brother Paolo, and was surprised with him by her husband, who slew them both. The story is the subject of a tragedy by Stephen Phillips, produced March 6, 1902, at the St. James's Theatre, London, where it ran for 136 performances. Henry Ainley played Paolo; George Alexander, Malatesta; Elizabeth Robins, Lucrezia; and Evelyn Millard, Francesca. See Francesca.

Papa. Latin form of the Greek *pappos* or *papas*, father. In origin and in ordinary usage the word is a child's name for father. It was an early title of bishops, e.g. S. Jerome refers to S. Cyprian as *Beatissimus papa*. Since the time of Gregory VII (1073-85) it has been claimed as the prescriptive title of the bishop of Rome. In the Greek Church the word denotes a priest. See Pope.

THE PAPACY: HISTORICAL OUTLINE

Canon W. F. Barry, D.D., Author of *The Papal Monarchy*

This article is supplemented by one on the Roman Catholic Church. See also the biographies of the Popes and the entries on the Councils; also Curia; Investiture; Pope; Rome; Vatican, etc.

No dynasty of rulers or lawgivers left standing in Europe to-day is as old as the papacy; none, perhaps, in the world except that of Japan.



Papacy, shield on which each pope emblazons his arms

In legal documents issued from his court the pope is termed bishop of Rome, successor of S. Peter, Pontifex Maximus and Vicar of Christ. He holds many more titles, but they all flow from one; for he is the Roman Father, emphatically such, and this Virgilian appellation (*Aeneid* ix, 449) prefigures an empire without end, visible in its throne of majesty, but something higher still, because the gift of Heaven. If S. Peter was prince of the Apostles, yet imperial Caesar was head of the college of Pontiffs, a priest who could offer sacrifice and edit or interpret the Sibylline books. This very ancient mingling of attributes in a priest-king was familiar to Jews and Christians, who venerated Melchizedek, king

of Salem, priest of the Most High God.

The Apostle Peter came to Rome, according to tradition, in A.D. 42, and in whatever year he suffered martyrdom, it is certain that his Confession became a place of pilgrimage from all parts of the empire, as Caius the priest bears witness at the beginning of the 3rd century. Reference to the good Apostles in S. Clement's epistle, about A.D. 94, and an implication of their heroic end, confirm the association of Peter and Paul with Roman Christianity; but succession to the bishopric is never derived from the teacher of the Gentiles. In the earliest catalogues of the popes a slight derangement leaves the chief links secure. There is no question among scholars of best repute that Peter died in Rome, where he had exercised supreme authority, and had designated Linus or Clement to succeed him as bishop.

Need for a Universal Religion

When Nero put to death an immense multitude of Christians in A.D. 64, the new and spiritual Rome, which was to rise upon the ruin of republic and empire, celebrated her birthday. When, again,

Titus destroyed Jerusalem, its prerogatives could not fail to be transferred elsewhere; and what city enjoyed an equal greatness with the world's capital, sanctified by the memories of Peter and Paul? Moreover, the unity of the empire demanded a universal religion which might absorb or supersede the many local gods, rites, and temples in East and West. From Egypt came the Isis worship, from Persia that of Mithras; both were tried by large numbers, only to be found wanting; and the field lay open to Christianity, which inherited the promises made to Judaism, while divesting them of its burdensome restrictions.

Identification with Rome

From S. Clement to S. Sylvester 90-313, the movement went forward, quickened by the "ten persecutions": for, as Tertullian knew, "the blood of martyrs is the seed of the Church." At last Caesar made terms with Peter; the great Constantine saw victory in the Cross and wove it into his standard. Jupiter Capitolinus abdicated; the Vatican became, in S. Jerome's language, the "Roman height"; a fresh capital was set up on the shores of the Bosphorus; and the heirs of Augustan Rome quitted the Tiber, to which they never returned, A.D. 324. From now on, the papacy and the most sacred of world cities were identified in fact as in idea. Old Rome had civilized the West; it fell to the lot of a better dynasty to convert the barbarians, to make the future Christian, and to plant foundations on which European culture, instinct with principles taught in the Gospel, should prove itself to be the dominant power above mankind.

When the Iconoclast emperors lost their hold on Central Italy, the popes were acclaimed deliverers of Rome, and the temporal power, as it is called, began. "Their noblest title," wrote Gibbon, "is the free choice of a people whom they had redeemed from slavery." They could not yet rescue Spain from the Saracens; but on Christmas Day, 800, Leo III crowned Charlemagne in S. Peter's and created the Holy Roman Empire, of which a far-off shadow flitted away in the disappearance of its Austrian successor. The popes made the French monarchy; they converted Ireland, Britain, Central Europe, Poland, Bohemia, and Russia by their missionaries Patrick, Augustine, Boniface, Cyril, and Methodius; they resisted the Franconian and Hohenstaufen emperors, who would have made the Church a department of state; and

they became suzerains of every kingdom in the West except France.

The holy war against Mahomedans revealed the same spirit armed for battle. It began with the conquest of Jerusalem in 1099, it did not cease until 1720, under Clement XI; and it remains the great Christian epic. The genuine Middle Ages came to an end when the 14th century opened with a fatal dispute between Philip the Fair of France and Boniface VIII. No century has been more disastrous to the papacy, captive at Avignon for seventy years, rent by the Great Schism during another forty. The council of Constance (1414-17), which restored visible unity, voted by nations instead of by bishops; and our modern world stood at the door.

Renaissance and Reformation

In 1453 the Turks captured Constantinople. All that we understand by culture fled to the West, and Rome took to herself the glorious task of Athens. A brilliant era came in, with learning, luxury, scandals, catastrophe in its train—Luther's revolt and the sack of Rome. The whole North fell away. England struck out a line of her own; Scotland obeyed John Knox, who obeyed Calvin. Then Ignatius of Loyola founded the Jesuits, and Rome got back one-half of what she had lost; but the Thirty Years' War, ending in 1648, drew a line which has never been altered since. The last of the great popes were Julius II, Pius V, and Sixtus V.

The principle of nationality, which was to make Italy free and united, ruled throughout the 19th century. The pope's temporal power fell before it. On Sept. 20, 1870, the Porta Pia was blown open by Italian guns; a plebiscite followed, and Rome began to fill the part of a secular capital. The Vatican was left to St. Peter. Yet in Leo XIII a great pope became once more visible, who could compel Prince Bismarck to kneel in spirit at Canossa. The Vatican Council had brought together bishops from every region of the globe; and papal infallibility was proclaimed sixty-three days before Rome capitulated.

For hundreds of years the papacy had been overlord of Europe, controlling the two swords, spiritual and temporal. It is now the head of a world-wide voluntary association, which wields no sword but its faith, and which owes nothing to secular governments. The pope is guardian of a temple not made with hands; in this light, at least, three hundred millions of Catholics regard him. His effective influence, at present, is more extensive than

in any former age, being less hampered by secular considerations, and much more direct in action.

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Papaw trees, laden with fruit

Ave Roma Immortalis, F. M. Crawford, 1898; Renaissance Types, W. S. Lilly, 1901; The Papal Monarchy, W. F. Barry, 1902; Lives of the Popes in the Early Middle Ages, H. K. Mann, 1902-10; The Holy Roman Empire, James Bryce, rev. ed. 1904; History of the Popes, L. v. Ranke, Eng. trans. E. Foster, 1908; The Papacy and Modern Times, W. F. Barry, 1911; and the Catholic Encyclopedia.

Papal States OR STATES OF THE CHURCH. Name given to the Italian territories which were under the temporal sovereignty of the popes. Differing at different periods, they generally formed a solid strip of territory running across Italy and bounded N.W. and N. by Tuscany, Modena, and the Po, and S.E. by the kingdom of Naples, the nucleus being the Roman patrimony of St. Peter and the exarchate of Ravenna, extorted from the Lombard kingdom by Pepin and given by him to Pope Stephen II in 755.

Through the Middle Ages the regions in which the pope was able to exercise temporal sovereignty varied greatly, reaching their maximum under Innocent III at the beginning of the 13th century. From the 16th to the 19th century they did not substantially vary, except during the Napoleonic ascendancy, until in 1860 a large portion attached itself to the new kingdom of Italy, by which the remnant was absorbed in 1870. The different districts in the Papal States have borne different names

at different times; but the names of Bologna, Ferrara, Ancona, Perugia, Urbino, Romagna, and others occur at almost all periods. See Italy; Papacy.

Papaveraceae. Name given to the poppy family. It forms a natural order of herbs and a few small shrubs with milky or coloured juice, chiefly natives of the N. temperate regions. They have alternate leaves, and the flower-buds hang on their stalks. There are only two sepals, which are thrown off when the crumpled, silky four petals expand. The seed-capsule is either like the familiar poppy head of the druggists' shops, opening when ripe by windows beneath the eaves of its broad roof to release the innumerable small seeds, or is a long, slender cylinder opening by a long valve on each side. *Papaver somniferum* yields opium from its milky juice; its seeds, which are not narcotic, are the maw-seed of the bird-fancier. See Opium; Poppy.

Papaw (*Carica papaya*). Small evergreen tree of the natural order Papayaceae. A native of S. America, it has large, alternate, seven-lobed leaves, the segments themselves being deeply lobed. The greenish flowers are either male or female, and the two kinds are often on separate trees. The dingy, orange-coloured fruit is an elongated oval nearly a foot long, with fleshy gourd-like rind enclosing five rows of small black seeds. It is eaten after being boiled or pickled. It yields the proteid-ferment papain.

Papeete. Capital and seaport of the Society Islands. Situated on the N.W. coast of Tahiti, it contains the residence of the French governor. Pop. 3,600.

Papen, FRANZ VON. German agent. In 1914 he was military attaché at the German em-



Franz von Papen, German agent

bassy in Washington, holding the rank of captain. When the Great War broke out he became one of the most active and unscrupulous of German agents in America, and along with

Karl Boy Ed (q.v.) and K. T. Dumba (q.v.), organized plots to impede the output of munitions for the Allies. He was incriminated in the plot to destroy the Welland canal. His guilt was proved in the trial of the Hamburg-America officials in New York, Nov., 1915, and he was recalled, Dec., 1915.

PAPER AND PAPER-MAKING

Arthur Baker, Chairman, Technical Section of the Paper Makers' Association of Great Britain and Ireland, 1921-22

This Encyclopedia contains articles on the materials from which paper is made, e.g. Bamboo; Esparto; Pulp. See Grand Falls; Gravesend; Newfoundland; also Book; Newspaper; Printing

Papyrus and parchment were the actual forerunners of paper. Papyrus making was a flourishing industry in Egypt about 3,000 B.C. The stem of a water reed used was cut in sections, split, opened out, and the fine pellicles surrounding the stem cemented together, on the same principle that three-ply wood is made to-day. The Romans improved the process and made different kinds. They named the water reed *papyrus*, from which our word paper is derived.

Parchment, made from the skin of goats, sheep, pigs, and other animals, in use long before Christ, attained its greatest consumption in the Middle Ages, and is still used for certain legal documents. Real paper, defined by one modern writer as "an aqueous deposit of vegetable fibre," is prepared from fibrous pulp.

The art of paper-making was cradled in the East. Ts'ai-Lun, Chinese minister of the interior about A.D. 105, is credited with having first produced paper from fibrous material, reduced to the condition of pulp. Paper discovered in Eastern Turkistan, belonging to the 4th century, or even earlier, contains flax and hemp as minor constituents, but it was not until about A.D. 760 that paper was prepared entirely from linen rags by the people of Samarkand. The art was acquired by the Arabs during their conquests in Tartary, became established in Egypt in the 10th century, was introduced by the Moors in Spain early in the 11th century, and brought to Europe proper by the Crusaders.

The First Paper Mills

Paper mills were first erected in Hainault in 1189, in Germany by the brothers Holbein at Ravensberg in 1336, in England by John Tate at Hertford about 1496, in the U.S.A., near Philadelphia, in 1690, and in Canada at St. Andrews in 1803. Cotton and linen rags were in general use as raw materials. They were moistened with water, allowed to ferment, washed, and finally reduced to paper pulp in stamping machines constructed of stone and wood, operated on the principle of the pestle and mortar.

For a long period the Dutch hand-made papers dominated the markets of the world, and, although a tremendous impetus was given to the industry by the inven-

tion of the Hollander beating engine, England remained very backward. It was not till 1725, when De Portal was granted a monopoly of making paper for Bank of England notes, and 1739, when Whatman erected his Maidstone mill, that positive progress was made.

The Hollander paved the way for a greater invention. In 1798, Louis Robert, manager of Didot's paper mills at Essones, invented his paper machine. Didot's brother-in-law, Gamble, took out an English patent in 1801, and introduced the idea to the brothers Fourdrinier, of London, who induced Bryan Donkin to build the first Fourdrinier paper machine, which was erected in Two Waters Mill, Hertford, in 1804.

Important Inventions

The original French model, improved by Donkin, who made it capable of producing a continuous web of moist paper, had been erected at Frogmore mill a year earlier. The vat machine, a different type, was invented in 1809 by John Dickinson. Canson applied suction pumps. Crompton invented the drying cylinders, Marshall the dandy roll, and in 1831 a machine was constructed in all essentials like the one in use to-day. The first English newspaper appeared in 1698, and from that time onward the demand for paper steadily grew. In 1861 the duty on paper imported into Great Britain was abolished.

Following the increased consumption of paper due to better education, British paper-makers were compelled to search for new sources of raw material. Relief came by the application of two chemical discoveries made at the close of the 18th century. Berthollet discovered the bleaching action of chlorine, and Leblanc prepared artificial soda. The latter discovery enabled paper-makers all over the world to produce cheap cellulose pulp from a wide range of fibre material.

In 1800 Koops published a book printed on straw paper. In 1852 Routledge introduced esparto, and was the first to use bamboo in 1875, but it is to Keller, a Saxon watchmaker, who produced ground wood in 1840, and Tilghman of Philadelphia, who took out his memorable patent for the sulphite

process of producing chemical pulp from wood in 1866, that we owe our cheap press and the modern newspaper. Developed by others, these two discoveries soon became of pronounced industrial value, and led to the establishment of immense pulp and paper industries in Scandinavia, the U.S.A., and Canada.

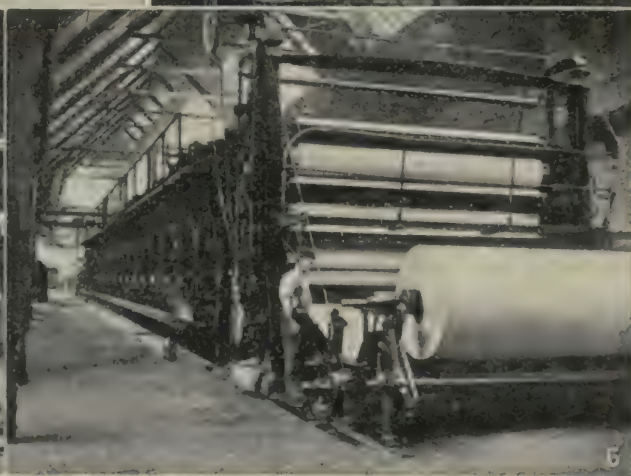
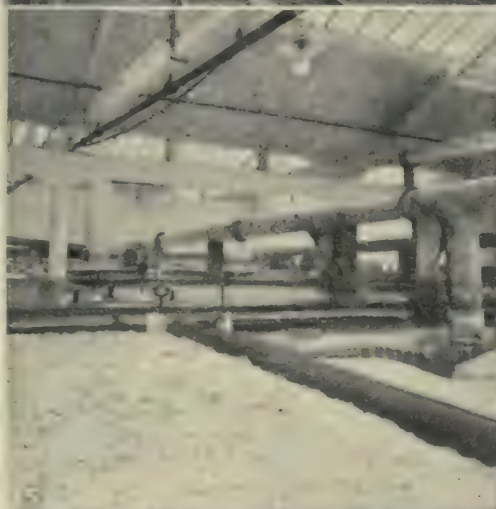
Mills at Grand Falls

By the enterprise of the Harmsworths, paper manufacture was initiated in Newfoundland, where the large mills erected at Grand Falls by the Anglo-Newfoundland Development Co. were opened by Viscount Northcliffe in Oct., 1909. They also built the Imperial Paper Mills, Gravesend, in 1911, and later acquired the Empire Paper Mills, Greenhithe. Both mills are the most modern of their kind in Europe, and have acted as a great stimulus to paper production in Great Britain.

Raw material used for paper manufacture may be divided into two classes: rags and substitutes for rags. Cotton and linen rags are used for the highest class hand-made and machine-made papers, from which great durability is expected. Rag substitutes, for general and special use, are drawn from the rejecta of the textile industries, crop plants, esparto grass, bamboo, spruce, pine, and some deciduous trees, such as poplar and birch. Old ropes, bags, hesians, and waste papers are used in the manufacture of wrapping paper. The pine forests of Scandinavia, U.S.A., and Canada provide raw material for much of the paper in everyday use.

Paper-makers all over the world are constantly on the lookout for new sources of fibre material, accounts of which are to be found in the regular bulletins of the Imperial Institute. The report on timber and paper materials published by the Imperial Institute committee for India in 1921 is exceptionally valuable. From among the numerous materials brought forward in recent years, cotton hull fibre, or "linters," stands out as an established source of paper-making material.

Hand-made papers are usually prepared from cotton and linen rags, and unused white cuttings from the textile industries. The raw material is carefully sorted, cut by hand or mechanical means, dusted, and subjected to digestion with alkaline lye under pressure, after which it is partially disintegrated in a breaking machine, washed, and finally bleached, when it arrives at what is called the "half-stuff" stage, ready for the



1. Stacks of wood pulp ready for the mill. 2. Beater floor with preparation plant. 3. Drainer house; pulp being bleached. 4. Walmsley paper machine; milky fluid, containing about 1 p.c. of paper pulp, being poured

in at one end, to emerge at the other as newsprint or news-paper. 5. Lengthwise view of the same machine. 6. Paper being wound on to a huge reel for the printing machine at the rate of a mile in 11 minutes

PAPER: STAGES IN THE PROCESS OF NEWSPRINT MANUFACTURE

By courtesy of the Imperial Paper Mills, Ltd., Gravesend

beating operation. In the beater the half-stuff is reduced to a condition of ultimate fibre, by the complete separation of each individual fibre, which is also reduced to suitable lengths. At the same time certain properties are imparted to the stock, dependent upon the length of time the pulp remains in the engine, and the manner of treatment it receives.

Treatment of the Pulp

The modern Hollander type beater is an oblong trough about half as wide as it is long, semi-circular at the ends, with a short, central partition, called a mid-feather. The beater roll which circulates the pulp is provided with blades, which may be of steel or bronze, placed in clumps round the circumference. Directly under the roll is a bed-plate also fitted with blades or bars. The bedplate is set at a slight angle with the face of the roll, in order that a cutting action may be obtained, and its surface takes up the curvature of the roll. It is by manipulation of this roll that the beating operation is performed. The time required may vary from 1 to 16 hours according to the material and type of paper required. The roll usually revolves with a peripheral speed of 2,000 ft. per minute.

The diluted paper pulp is screened and made into paper, one sheet at a time, by the vatman, who dips a shallow sieve, in the form of a hand mould, into a vat of the pulp, withdraws it with a definite charge of stuff, and almost simultaneously shakes the mould in a peculiar fashion, in order that the individual fibres shall felt or interlace as the water falls through the sieve. The wet sheet is drained and placed by the "coucher" between damp woollen felts, which are piled, and later submitted to great pressure in an hydraulic press. After the excess water is removed, the sheets are taken out and air dried. The dry sheet is sized by dipping into a solution of gelatin size, then again air dried. The paper is surfaced by placing each single sheet between two zinc or copper plates, and passing a pile of these through heavy calender rolls, which operation is called plate glazing.

Half-stuff produced from rags is practically pure cellulose. When other raw materials are used, different chemical processes may be employed to eliminate the non-fibrous and non-cellulose elements prior to the beating operation.

Chemical pulp is produced by the soda, sulphate or sulphite process, and the names given to the resultant pulp indicate the mode

of its preparation. Thus: soda pulp from digestion with caustic soda; sulphate from digestion with a mixture of caustic soda and sulphite of soda; and sulphite from digestion with bi-sulphite of lime and magnesia, containing a certain percentage of free sulphur-dioxide in solution. Chemical wood pulp carefully prepared is the best substitute for rags. It is difficult to say in what paper it cannot be applied.

Ground wood, or mechanical pulp, is, as the name denotes, prepared solely by mechanical means. Wood blocks, previously barked and cut into suitable lengths, are pressed by hydraulic pressure against grooved revolving cylindrical stones. A stream of water directed between the blocks carries away the ground pulp, which consists of microscopic splinters containing all the ingredients of the growing timber. Ground wood is only used in the manufacture of paper having a transitory value, as news paper, of which it is the chief constituent.

The Beating Process

The production of chemical wood pulp and ground wood is usually carried on at pulp mills located near the forests, and situated where water power is available. In the countries where pulp mills are adjacent to, or part of the paper mills, both chemical pulp and ground wood are used for paper manufacture in the slush state, but they require to be manufactured into sheet form when shipped to other markets. Mechanical pulp is usually shipped 40 to 50 p.c. moist, and chemical pulp air dry.

For paper other than newsprint, all materials after reaching the half-stuff stage require treatment in the beater before they are ready to pass on to the machine. During the beating process, colouring, filling, and sizing materials are added to the stock. Resin soap and alum are the chief sizing materials used. After beating, the stock is passed through a refining machine. Diluted to less than 1 p.c., it is next pumped into the strainers, which consist of flat or rotating screens fitted with plates perforated with very fine slits, about 7/1,000ths of an inch in width. The liquid pulp now flows over the apron, under a sluice, called a "slice," and on to the wire of the paper machine. The wire is an endless sieve travelling at any speed up to 1,000 ft. per minute, according to the quality of the paper being made. The moment the pulp comes under the influence of its forward movement, felting of the fibres is brought about by a lateral shake imparted to the wire by mechanical means.

Endless rubber belts, called "deckle straps," travelling on the top and at each side of the wire, prevent the pulp overflowing the sides.

As the pulp travels forward, the fibres settle down in position, parting with the water through the wire. Passing over vacuum boxes more water is extracted, and still more by the pressure of the couch roll. Unsupported for the first time, the wet web is carried forward to the press rolls by felts. The function of the presses is to remove still more water, and to smooth out the rough surfaces. The web, now containing about 66 p.c. of moisture, is carried to the drying cylinders, which are heated with steam, and conducted to the other end of the machine, where it passes through calender rolls to give a uniform finish on both sides of the paper. If the paper is required on reels, it is usually re-reeled on special machines.

Watermarks are obtained in hand-made papers by means of a raised pattern on the surface of the wire of the mould. The same effect is obtained on the paper machine by using a revolving skeleton cylinder, called the dandy roll, covered externally with fine wire cloth, to which is fixed the design required. This roll revolves upon the wet pulp just before it experiences the full effect of the vacuum boxes.

Facts and Figures

The modern paper machine is a very large manufacturing unit, costly, imposing, and ingenious. A machine of the kind illustrated can produce from 1.5 to 2.0 tons of paper per hour.

There are unlimited varieties of paper, from bank-note paper down to common wrappings. The best and most durable machine-made papers are made from rags, preparatory treatment being identical with that pursued for hand-made qualities.

In 1921 there were in Great Britain and Ireland 260 paper mills, containing 568 machines. The world's consumption of paper was estimated, in 1912, to be about 9½ million tons. The consumption in 1920 was probably not less than 14 million tons.

Bibliography. Chapters on Paper Making, C. Beadle, 1904-7; The Paper Trade, A. Dykes Spicer, 1907; Paper and its Uses, E. A. Dawe, 1914; The Paper Mill Chemist, H. P. Stevens, 2nd ed. 1919; Paper Technology, R. W. Sindall, 3rd ed. 1920; Modern Paper Machinery, G. S. Whitham, 1920; Chemistry of Pulp and Paper Making, E. Sutermeister, 1920; Text Book of Paper Making, C. F. Cross and E. J. Bevan, 5th ed. 1921.

Paper, SIZES OF. Term for the dimensions of printing, writing, drawing, and brown papers. Of British printing paper there are 14 sizes, ranging from foolscap, 17 ins. by 13½ ins., to double post, 32 ins. by 40 ins.; of writing and drawing papers, 17 sizes, varying from post, 15 ins. by 12½ ins., to emperor, 72 ins. by 48 ins.; and of brown papers, eight sizes, which range from Kent cap, 21 ins. by 18 ins., to eagle, 46 ins. by 36 ins.

Paperhanging. Act of covering walls with wallpaper. Stamped paper came from Holland in the 16th century, and in the 18th century papering began steadily to supersede panelling. A piece of English wallpaper is 12 yds. long by 21 ins. wide, and contains 63 sq. ft. French and American pieces are smaller. Relief, embossed, and leather or textile wall-coverings vary in width from 16 ins. to 3 ft. New walls are prepared for papering by glasspapering the surface to make it even, and by washing and sizing to promote adhesion.

For the hanging of ordinary papers, a stiff paste made of wheat or rye flour is commonly used. The addition of a little formalin or carbolic acid to flour paste prevents decomposition. Glue paste is used for heavy fabrics, into which, to secure adhesion, thin tacks are half-driven for easy removal when the work is dry. Points demanding special care in paperhanging are: To match the pieces so that the pattern shall not be mutilated; at projecting or recessed corners to cut the paper so that no more than half an inch or so shall turn the corner, and to work away from a window, so that overlapping edges do not face the light.

Paper Money. In the fullest sense, all written documents that are promises to pay money and that serve as substitutes for actual coin. It includes, therefore, not only the banknotes and the currency notes of the United Kingdom, and similar forms of currency elsewhere, but also cheques,

postal and money orders, bills of exchange, and even promissory notes, treasury bills, etc. In a narrower sense, it is used for bank and currency notes only.

Paper money is divided into two classes, convertible—that can be exchanged on demand for gold—and inconvertible, that cannot. The issue of convertible paper currency is usually a safe and economical financial operation, as it represents an actual increase of gold; but the issue of inconvertible paper money on a large scale is highly dangerous to financial stability, and has led to serious financial crises, as at the time of the French Revolution, and in Russia under the Bolsheviks.

The enormous issue of paper money in the United Kingdom after the outbreak of the Great War contributed largely to the serious rise in prices.

During the five war years all the principal countries of the world made paper money in enormous quantities, as the following table shows:

PAPER MONEY CIRCULATION BEFORE AND AFTER THE GREAT WAR

| Countries | Dec., 1919 | 1914 |
|------------------------------------|----------------|----------------|
| | £ | £ |
| England: | | |
| Currency notes | 338,300,000 | 38,500,000 |
| Bank of England notes | 86,700,000 | 36,100,000 |
| United States of America | 780,000,000 | 220,000,000 |
| Bank of France | 1,497,000,000 | 267,300,000 |
| Bank of Germany | 2 140,000,000 | 266,400,000 |
| Italy | 578,000,000 | 143,700,000 |
| Bank of Spain | 154,000,000 | 78,000,000 |
| Bank of Sweden | 41,500,000 | 15,900,000 |
| Bank of Japan | 121,000,000 | 39,000,000 |
| Bank of Denmark | 24,200,000 | 11,500,000 |
| Bank of Norway | 23,500,000 | 7,400,000 |
| Swiss National | 37,500,000 | 18,000,000 |
| Netherlands Bank | 86,200,000 | 39,400,000 |
| | £5,908,000,000 | £1,201,800,000 |

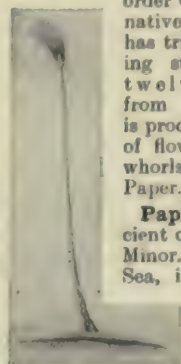
As the reserve of gold of the state banks in the same period had only increased from £575,000,000 to £1,106,000,000, it follows that the proportion of gold to paper had fallen heavily. £1 of English gold money is worth in American gold money \$4·86½, a value fixed by the respective mint laws of the two countries. There can be no change in the gold price of the English gold sovereign except by law, but the value of the English paper pound, so long as it is inconvertible into gold on demand, fluctuates according to the supply of paper pounds. See Credit; Money; Prices.

Paper Mulberry (*Broussonetia papyrifera*). Small tree of the natural order Urticaceae. A native of China, it has hairy egg-shaped leaves. The greenish flowers have the sexes distinct on separate trees, the males in catkin-like clusters, the females in a round head. The latter are succeeded by

scarlet fruits much like a mulberry in shape, but without flavour. The inner bark is beaten into pulp to make paper in China and Japan, and in the South Sea Islands into a kind of cloth.

Paper Reed (*Cyperus papyrus*). Perennial sedge of the natural order Cyperaceae. A native of Egypt, it has triangular flowering stems, three to twelve feet high, from whose summit is produced the spike of flowers ringed by whorls of bracts. See Paper.

Paphlagonia. Ancient country of Asia Minor. On the Black Sea, it lay between Pontus on the E. and Bithynia on the W. It was a mountainous area, and its capital was Gangra. After having been part of the kingdom of



Paper Reed. Stem with flowering spike

its capital was Gangra. After having been part of the kingdom of

Croesus, it passed under the rule of the Persian kings, but it evidently enjoyed a considerable measure of independence, while Greeks made settlements on the coast. The eastern portion next became part of the domains of the king of Pontus, and remained so until the power of Mithradates was destroyed by the Romans, who included it in the province of Bithynia.

Paphos. Two ancient towns on the W. coast of the island of Cyprus. Old Paphos (mod. Kuku), about a mile from the sea, and originally a Phoenician colony, was famous for its worship of Aphrodite, who was said to have landed here after her birth from the sea foam. Remains of the wall of the temple erected in her honour still exist. New Paphos (mod. Baffo), about 7 m. to the W. and more inland, became one of the seats of the administration of the island in Roman times. See Cyprus.



Paper Mulberry. Leaves and pendulous clusters of male flowers

Papias (c. 60–135). Apostolic father. He was of Phrygian birth, and is said to have become bishop of Hierapolis. The statements that he was associated with S. John and S. Polycarp, and that he was martyred, have been disproved. He is important as the author of an Exposition of the Oracles of the Lord, of which only fragments are extant, which tells us that S. Matthew wrote the Sayings of Christ in Hebrew, and that S. Mark's Gospel consists of the recollections of S. Peter.

Papier Mâché (Fr., pulped paper). Paper pulp compressed and moulded and used in the manufacture of various articles. Many kinds of paper may be pulped together for the coarser kinds of papier mâché with some added earthy material, and glue or resinous matter to help to bind it. This composition is then rolled into thick sheets, which are moulded and pressed to the requisite shape and dried, after which the article can be decorated with enamel, paint, or inlaying. Trays, boxes, masks, and even light furniture are made of papier mâché, which is used for stereotyping, also for plaster work and other decorations. See Pulp.

Papilloma. Tumour more or less elongated in shape. Warts (*q.v.*) and polypi are common forms.

Papin, DENIS (1647–1712). French physicist. Born Aug. 22, 1647, at Blois, France, he became assistant to Huygens in Paris in his experiments with the air pump, into which he introduced improvements. He visited England, became a member of the Royal Society, and in 1690 constructed the first steam engine with a piston, applying his invention to a paddle-wheel boat. He invented the safety valve, and showed that the boiling points of liquids depended upon the pressures to which they were subjected. He died in London. See Growth of the Steam Engine, R. H. Thurston, 5th ed. 1895.

Papineau, LOUIS JOSEPH (1786–1871). Canadian politician. Born at Montreal, Oct. 7, 1786, and educated at Quebec, he became a lawyer and in 1808 a member of the house of assembly of Lower Canada. In 1815 he was made Speaker, and in 1820 a member of the executive council, on which he sat for three years. Papineau, as the leader of the

French Canadians, was prominent in desiring drastic changes in the methods of government, and in opposing the suggested union of the two Canadas. Embittered by failure to carry his reforms, he became actively hostile to the British government, and in 1837 led a rebellion. This failed and Papineau fled to the U.S.A., being declared a rebel, and did not take part in the further course of the rising in 1838. In 1839 he went to Paris, but in 1847 a general amnesty was proclaimed and he returned to Canada. Elected to the legislature, until 1864 he took part in public life. He died Sept. 24, 1871. See Papineau-Cartier, A. B. de Celles, 1905.

Pappenheim, GOTTFRIED HEINRICH, COUNT VON (1594–1632). Bavarian soldier. He fought under Sigismund against the Poles, and joined the Catholic League, 1620. He was one of the chief imperial leaders of the Thirty Years' War (*q.v.*). After Tilly's death he served with Wallenstein, and at the battle of Lützen fell wounded, dying at Leipzig, Nov. 17, 1632.

Papua. British territory in S.E. New Guinea. In 1828 the Dutch proclaimed possession over New Guinea, W. of 141° E. In 1883 Queensland annexed the rest of the island, but this action was repudiated by the imperial government. About a year later Germany annexed the N.E., and the S.E. became a British protectorate, and in 1888 it became a colony; in 1901 financial responsibility and in 1906 complete control passed to the Commonwealth of Australia. The territory includes the neighbouring islands, Samarai, dis-

covered in 1873, the Louisiades, the D'Entrecasteaux Group, Laughlan, and Trobriand islands, and Woodlark Island, at one time the chief goldfield of the island. See



New Guinea; Nose-Ornament; Samarai.

Papua, GULF OF. Large bay on the S. coast of the island of New Guinea, N.E. of C. York Peninsula, Queensland. It receives the waters of the Fly and other rivers of Papua.

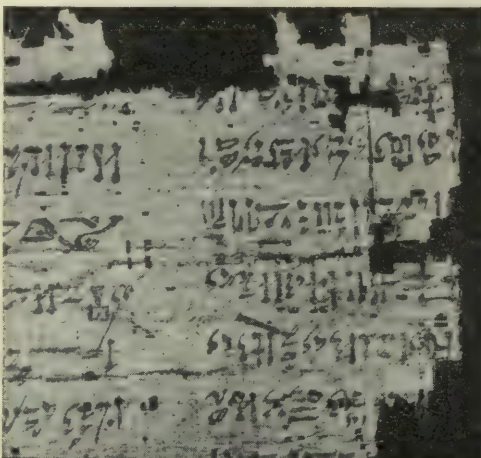


Papuan. Two natives of New Guinea

Papuan (Malay, mop-headed). Term denoting aboriginal peoples of negroid stock, mostly in Dutch New Guinea. A tall, brownish-black, long-headed race, with receding forehead, prominent brow-ridges, nose sometimes aquiline, and frizzy hair—often dressed mopwise—their culture is characterised by bone-tipped arrows and stone clubs.

Papyrus. Ancient documents written upon papyrus, this being the Greek form of the Egyptian name. The papyrus rush, *Cyperus papyrus*, formerly harvested in the Egyptian Delta for numerous purposes, has receded to the upper Nile. Moistened strips of stem laid side by side formed the longitudinal warp; shorter strips overlaid crosswise, after the whole was pressed, dried, and polished, formed the writing surface.

Ink, of sepia, animal charcoal, and other substances, was applied with a reed.



Papyrus. Reproduction of part of a papyrus inscribed in the Hieratic character, containing an Egyptian romance and bearing the names of Antef, 2500 B.C., and Thothmes III, 1800 B.C.

British Museum

These materials endured in literary use from the pyramid age, if not before, to the 4th century of our era, surviving casually to 1250.

Invented for Egyptian writing, they were adopted for Aramaic (as at Elephantine), Greek, Latin, and Arabic, constituting an important export trade at Alexandria in Greco-Roman times. The oldest example, now at Cairo, contains records of the Vth dynasty king Assa, during whose reign his tutor, Ptahhotep, compiled the famous maxims preserved in a XIth dynasty copy, the *Prisse* at Paris, sometimes called the oldest book in the world. The longest roll is the Harris No. 1, 135 ft. long, a panegyric of Rameses III (c. 1170 B.C.), in the British Museum. An invaluable king list is at Turin. The finest rolls are the illustrated copies of the *Book of the Dead*. The Alexandrian library, destroyed by fire, 47 B.C., contained 700,000 works. The masses of papyri found in Egypt have yielded valuable literary remains. See *Ani*; *Codex*; *Egypt Exploration Society*; *Oxyrhynchus*; *Paper*; consult also *The Palaeography of Greek Papyri*, F. G. Kenyon, 1899.

Par (Lat., equal). Financial term for the price of a stock or share when such sells for exactly its face value. Thus if Consols rose to £100 it would be said that the price was at par. Above or below par means that the selling price is higher or lower than the face value.

Para. Coin in general use in Turkey, Montenegro, Serbia, Cyprus, and Egypt. Usually of copper, but also an alloy of various metals, it is the fortieth part of a piastre. Forty, 20, 10, 5, and 1 para pieces are coined in Turkey. In Serbia the para is the one hundredth part of the dinar, and is equivalent to a centime. Fifty, 20, 10, 5, 2, and 1 para coins are issued.



Para, Turkish copper coin, actual size

In N. Borneo the para is a weight equivalent to 90 lb. avoirdupois. See *Piastre*.

Pará. River of Brazil. Strictly the S. distributary of the Amazon delta, it receives the Tocantins and has the island of Marajo between it and the N. Channel. It is 200 m. long with a width from 12 to 40 m., and has a bore during the spring tides 15 ft. in height.

Pará. State of Brazil. It is situated in the N.E., adjacent to the three Guianas, to the E. of Amazonas, with a long coast-line

on the Atlantic Ocean. The lower Amazon almost bisects the state, which contains the lower courses of the Tapajoz, Xingu, and Tocantins tributaries, and includes the island of Marajo in the Amazon delta. The only rly. is from Pará to Bragança. Most of the state is covered with dense forest. Rubber, cacao, timber, and Brazil nuts are obtained, and it gives its name to a form of rubber. Pará is the capital. Its area is 443,903 sq. m. Pop. 568,000. See *Rubber*.

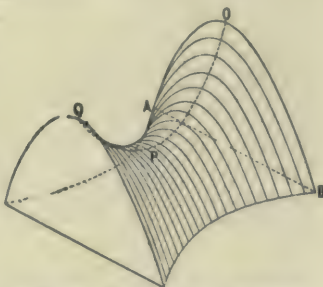
Pará or **BELEM DO PARÁ.** Seaport of Brazil, capital of the state of Pará. It is situated on the Bay of Guajara, a portion of the arm of the Amazon delta known as the Rio Pará. Formerly vessels lay in the deep-water anchorage and loaded from lighters, but a deep channel has been made, and vessels now lie up to the quay. The finest buildings are the governor's palace, the Parliament House, the cathedral, Goeldi museum, and La Paz theatre. All merchant ships trading on the



Pará, Brazil. The Praça, looking towards the Amazon

directrix. The curve is an important one in dynamics as the path of a body projected at an angle to the horizon, and in optics, since a light placed at the focus of a parabolic mirror has its rays reflected in parallel lines, a fact made use of in the construction of lighthouse lanterns. See *Conic Sections*.

Paraboloid. In solid geometry, a solid whose surface is generated by a parabola which moves with its vertex always on another parabola. The axes of the two parabolas are parallel and their planes at right angles. A paraboloid of revolution is generated by the revolution of a parabola about its axis.



Paraboloid. Diagram illustrating a paraboloid surface. OPQ is a parabola along which the vertex O of parabola AOB moves

Amazon must enter or clear at the port, which exports cacao, Brazil nuts, hides, and half the Brazilian yield of rubber (*q.v.*). Pop. 200,000.

Parable (Gr. *parabolē*, juxtaposition, comparison). Illustration of a statement in a discourse. The term is now mainly confined to those teachings of Christ which convey a spiritual lesson in the form of an anecdote or short story. Popularly described as an earthly story with a heavenly meaning, a parable differs from a fable or an allegory in being either a true record of fact, or at least true to experience, while a fable always, and an allegory usually, is purely fictitious and often impossible. In the Bible the word parable is used somewhat vaguely, but its meanings may be

Paracelsus or **THEOPHRASTUS BOMBAST VON HOHENHEIM** (c. 1492-1541). Swiss physician and philosopher. Born at Einsiedeln, the son of a physician, his education was irregular, but being precocious, he picked up from various teachers a knowledge of medicine, chemistry, etc. He travelled much, studied nature, and despised bookmen. Although he had no degree, he practised, and was even appointed professor of physic and surgery at Basel, lecturing in German. Of undoubted ability, though of erratic life, Paracelsus, by his successful if empirical application of mineral medicines, gave



Paracelsus, Swiss physician

a great impetus to pharmaceutical chemistry. Accused of being a necromancer, he had to flee from Basel, and after an adventurous life, died at Salzburg, Sept. 24, 1541.

Paracelsus is the hero of a work by R. Browning, published 1835, in which he is represented as a philosophical genius with lofty aims, whose pride and ambition destroy his sympathy and debase his moral character. See Lives, F. Hartmann, 1887; A. M. Stoddart, 1911.

Parachute (Fr. from Ital. *parare*, ward off; Fr. *chute*, a fall). Apparatus intended to reduce the speed of bodies falling through the air from considerable heights. In all practical forms a parachute consists of an inverted bowl-shaped fabric surface with suspension ropes attached at its outer circumference at uniform and fairly close intervals, all the suspension ropes meeting at a point some considerable distance below the extended fabric. At or below this point the body to be dropped is suspended. When a parachute is released from a height its vertical movement under the effect of gravity produces an upward air pressure on the fabric which retards the fall.

Parachutes have been used for descents from balloons for many years, but until just before the Great War their use had been confined to spectacular exhibitions. During that struggle the use of kite balloons and the liability of these to destruction by artillery and enemy aircraft led to the use of parachutes as life-saving devices for the crews, and over 800 British airmen escaped in safety from burning observation balloons by the use of them. In 600 descents from observation balloons only three failures to open occurred. Still later parachutes were developed for use from aeroplanes, and a large number of special types of parachute have been devised to meet the special conditions caused by aircraft getting out of control. See Aeroplane.

Paraclete (Gr. *paracletus*). Word used in S. John's Gospel as a name of the Holy Ghost or Holy Spirit (John xiv, 16 and 26; xv, 26; and xvi, 7). It is also used, in the Epistles of S. John (1, ii, 1), of Christ. From Chrysostom's time, the word has been translated Comforter, a custom based on Is. xl, 1, and on the fact that *paraclēsis* sometimes means consolation, but modern commentators prefer the translation of "one called in" or "called to the side of another," for the Gospel reference, and that of Advocate in the Epistle. Paraclete is a title of the Holy Ghost in



Parachute. 1. Method of fastening closed parachute to back of airman. By pulling a ring the parachute is opened. 2. Airman descending by means of a parachute. 3. Method of packing and attaching a parachute in an aeroplane. By moving a lever the pilot actuates compressed air mechanism which ejects the parachute ready for use

the Roman Breviary. A prayer book used in the modern Greek Church, first printed in 1625, is called Paracleticē or Paracleticon. See Abelard; Holy Spirit; consult also The Paraclete, J. Parker, 1876.

Parade (Fr. from Ital. *parata*; Lat., prepared). In a military sense, gathering together of a body of troops for any purpose. The object of the parade may be either drill, inspection, fatigues, or other duties, or for the communication of special orders. See Drill.

Paradise. Word used as a synonym for the garden of Eden; for a region of surpassing loveliness; as a place to which the souls of the righteous are transplanted after death; and sometimes for heaven. The Heb.

pardes, and Gr. *paradeisos*, were borrowed from old Persian *pairi-dāza*, a park, especially a deer park or garden of the Persian kings. Applied in the LXX, Syriac and Vulgate versions, though not in the Hebrew original, except in Ezek. 28, 31, to the garden of Eden, the word came to be applied by the apocalyptic writers to the heavenly counterpart of the earthly garden.

The phrase Paradise of Fools is applied to a place midway between Paradise and Purgatory, in which those who have sinned without intention await the Judgement Day. The medieval conception of Paradise is elaborated in the third part of Dante's Divine Comedy.

The Moslem Paradise is usually spoken of as a place of unsatiating

sensual pleasure; modern commentators on the Koran insist that Paradise is not only a place in which to enjoy the blessings and rewards of good deeds on earth, but a starting-point of unending spiritual advancement. See *Angelic*, Fra; Eden; Heaven; Hell; Purgatory; consult also *Wo lag das Paradies?*, F. Delitzsch, 1881; Early Christian Visions of the Other World, J. A. McCulloch, 1912.

Paradise Fish. Name given to an artificially modified fish belonging to the genus *Polyacanthus*. It is nearly allied to the climbing perch, and has been developed in China by a long process of selective breeding. It is striped with red, gold, and green, and has long wavy fins and tail; it is very hardy, and breeds readily in quite small aquaria.

Paradise Lost. Epic poem by Milton, first published in 1667. It begins with the fall of Satan and his rebellious host of angels from heaven and then proceeds to man's fall, consequent upon the warning of the powers of darkness against the beings whom God had put in Paradise in the newly-created world, and so to the expulsion of Adam and Eve from the Garden of Eden. The work is acknowledged as the great representative of the epic in English literature, written in finely cadenced and dignified blank verse, to which the poet imparted something of a new music, and as the greatest of all poems in its use of supernatural machinery. See Milton, John; Poetry.

Paradise Regained. Epic poem by Milton, published in 1671. Stimulated by Thomas Ellwood, a Quaker friend, who remarked: 'Thou hast said much here of Paradise Lost, but what hast thou to say of Paradise Found?' Milton set about this sequel in four books. The subject is the temptation of Christ, by whose victory over Satan the effect of the temptation of Adam was reversed. The poem differs from *Paradise Lost* in the much greater simplicity of the story, which is mainly an expansion of the Gospel narrative, and in the singular austerity of the style. It has never been as popular as the former epic, although some poets and critics have expressed the highest admiration for it. See Milton, John.

Paradiso. GRAN. Mountain of Italy, in Piedmont. The culminating peak of the Graian Alps, and the highest mountain in Italy, alt. 13,324 ft., it overlooks the Piedmont plain and is S. of the Dora Baltea. The ascent is usually made from Valsavaranche, skirting

the Gran Paradiso glacier; the descent frequently crosses the Glacier de la Tribulation to Cogne. It was first climbed by Cowell and Dundas in 1860. See Alps; Mountaineering.

Parados (Fr. from Ital. *parare*, to shelter, and Fr. *dos*, back). Military term for the cover at the back of a trench. In fortifications and trenches it is necessary to provide cover from reverse



Paradise Fish. The artificially modified fish bred in China

fire, i.e. fire directed at the occupants from the rear of the position, or badly aimed shots from another position, and from flying fragments of shell exploding behind the position. The cover provided, whether it be earth, sandbags, or masonry, is termed the *parados* of the position. See Cover; Entrenchment; Fire Step; Fortification.

Paradox (Gr. *para*, contrary to; *doxa*, opinion). Statement contrary to accepted opinion, or appearing to be a reversal of that which is commonly understood. A perfectly legitimate figure, serving to illustrate an argument either by exaggeration, or by revealing a side of it in a new light, it is one that becomes dangerously facile, and degenerates into little more than playing with ideas as a punster plays with words. Modern writers who have made something like a cult of the paradox are Oscar Wilde, G. B. Shaw, and G. K. Chesterton. See A Budget of Paradoxes, A. de Morgan, 1872.

Paraffin. In chemistry, term applied to a large class of hydrocarbons. It is generally taken as referring to the solid, crystalline mass, white when purified, which is obtained from petroleum and from certain coals and shale oils. It was first manufactured in 1850 on a commercial scale by James Young, of Glasgow, who found it in a sample of thick oil from a mine in Derbyshire. The first works were established at Alfreton in that county; but before long the centre of production shifted to the south of Scotland, where paraffin has ever since been obtained in large quantities from the shale oil works of that region, the crude shales yielding the largest proportion of paraffin of any source now being worked. The proportion

yielded by petroleum is very small, rarely over two p.c. Peat yields a minute proportion; a certain amount is obtained from wood, and considerable quantities in Germany from brown coal. All are obtained by the method of destructive distillation.

In recovering paraffin from the crude oils yielded by the primary operation, the lighter, more volatile constituents of the crude oils are first driven off, when the paraffin settles out in brownish scales. These are purified by treatment with spirit or acid, by washing, pressing, dissolving, filtering through bone-black in the same way as sugar is finally whitened, recrystallisation, and final pressing. When pure, paraffin is a solid of a white colour with a tinge of blue, and highly translucent; hard and wax-like, free from taste or odour, it is chiefly used in the manufacture of candles, mixed with a little stearine, and of matches, for waterproofing fabrics, preserving food and wood, and as an insulator in electricity. Ozokerite is a natural impure paraffin. Paraffin oil is obtained by fractional distillation of shale, the lightest oils from the latter being used as solvents, and the next as paraffin oil, the remainder being the solid paraffin. See Oil; Ozokerite.

Paragua OR PALAWAN. Island of the Philippines. Situated to the W. of the more important islands of this group, it is about 270 m. long and from 4 m. to 15 m. wide, and has an area of 4,027 sq. m. Its dependent islands, which stretch away to Borneo, cover an additional 1,210 sq. m. Paragua is mountainous and well wooded, and has a number of short, rapid rivers and excellent natural harbours. Resin and timber are exported in great quantities. Pop. 11,000.

Paraguay. River of S. America, principal affluent of the Paraná. It rises in the Sierra Diamante in the Matto Grosso plateau, and flows S. to join the Paraná above Corrientes. Above Asunción it receives the São Lourenço, Taquary, and other tributaries from the E. At Asunción the Pilcomayo and, lower down, the Bermejo drain from the Andes across El Gran Chaco. The Pilcomayo and lower Paraguay form the W. boundary of the state of Paraguay. Steamboats from Buenos Aires reach Asunción. For smaller boats the Pilcomayo is navigable for 150 m. and the main stream is navigable for nearly the whole course. Its length is 1,500 m. The confluence with the Paraná was discovered by Sebastian Cabot in 1526. See Asunción.

PARAGUAY: THE LAND & THE PEOPLE

F. A. Kirkpatrick, Author of *South America and the War*

Further information will be found in the articles on the towns and rivers of Paraguay. See also *South America; Jesuits*

Paraguay, or La República del Paraguay, is a S. American republic forming part of the Rio de la Plata system.



Paraguay arms

It has no sea coast, but possesses free access to the Atlantic by the open waters of the Rio de la Plata. Paraguay proper, the main and

more settled part of the country, forms an irregular rectangle, about 65,000 sq. m. in extent, bordered by the river Paraná and its great confluent the Paraguay, which gives its name to the republic. These streams separate Paraguayan territory from Argentina on the W., S., and S.W., and from Brazil on the E.

To the N. the river Apá forms the Brazilian boundary. Besides this clearly defined main territory, the republic owns the vast region of the N. Chaco, probably about 50,000 sq. m., separated from the Argentine Chaco to the S.W. by the river Pilcomayo, and from Bolivia to the N.W. by an arbitrary frontier line. The Paraguayan Chaco is a region quite distinct from Paraguay proper. It lies mainly within the tropics, a country of forest and swamp, with intervening grassy savannas, of winding rivers, affluents of the Paraguay, which frequently shift their course and overflow their banks. Settlement by white men is only beginning in the Chaco, and scanty tribes of savage Indians still inhabit the river banks.

Paraguay is traversed in its N. part by the Tropic of Capricorn. Thus the climate is between tropical and sub-tropical.

The summers are hot and bring a plague of insects, especially near the rivers; the winters are warm, but temperate and agreeable. The rainy season is in summer. A great part of the country is clothed with magnificent forest yielding many kinds of valuable and beautiful timber, varied by abundance of flowering shrubs. Ranges of hills, seldom exceeding 1,500 ft. alt., rise above grassy plateaux admirably adapted for pasture. The rich soil responds readily to cultivation and can produce all tropical and sub-

tropical fruits. The river Paraguay provides a splendid natural waterway from N. to S. Two of the most valuable products grow wild in the woods, namely, the hard wood known as quebracho and the shrub which yields *yerba maté*.

The population is probably less than a million. Asunción, the capital and chief port, situated on the left bank of the Paraguay opposite the mouth of the Pilcomayo, has about 120,000 inhabitants; Villa Rica about 30,000; Concepción, a port on the Paraguay, about 15,000. The people are partly Spanish, partly Indian (Guarani) in origin, the latter greatly predominating. An aristocracy of European or Europeanised origin fills the chief official posts and the ranks of the professions, and speaks Spanish, the official language of the republic. The peasantry and working classes still speak their native language, Guarani, which is also generally understood and used as a second language by all classes. More perhaps than in any other S. American republic the Indians have been adopted into the social scheme and have tranquilly accepted this arrangement, of which the foundations were laid by the conquistadores of the 16th century. The stormy history of the republic and its peculiar social system have precluded any marked literary development. There is a prolific newspaper press.

System of Government

The constitution of Paraguay is of the usual S. American pattern. The executive is in the hands of a president, holding office for four years and assisted by five ministers. Half of the 20 senators and 40 deputies vacate their seats every two years. The republic is divided into 93 departments, but their local administration is largely controlled by the central executive. The difference between republican theory and actual practice is perhaps even greater than in the contiguous republics. There is a small standing army of about 2,000 men, but in case of need the National Guard is liable for service. The R.C. Church is established, and all religions are tolerated. Primary education is nominally free and compulsory, but is in fact much neglected. There is better provision for higher education. The legal monetary unit is a gold dollar at five to the £, but the actual currency is paper, which varies much in value. In recent

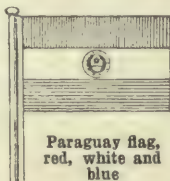
years exchange has fluctuated between 70 and 100 paper dollars to the £.

The main channel of communication is the navigable system of the Rio de la Plata, which places this inland republic in contact with the outer world. Large river steamers and small sea-going ships penetrate as far as Asunción. Thence N. the Paraguay is navigable by smaller steamers throughout the limits of the republic. The broken and rapid stream of the Upper Paraná, above its junction with the Paraguay, offers less easy and less continuous navigation. The use of small motor-boats is gradually making available for transit the rivers which flow between the ridges of hills into the Paraguay. In addition to water transport, Asunción now has direct rly. communication with Buenos Aires. In 1913 was completed the steam train-ferry crossing the Alto Paraná from Encarnación in Paraguay to Posadas in Argentina, and linking the Central Paraguay Rly. with the Argentine North-Eastern. There are some short internal rlys., and a scheme for linking Asunción with the Brazilian rly. system.

Paraguay and Argentina

Whether by river or rail, almost the whole foreign trade passes through Buenos Aires; thus Paraguay is in a sense a commercial dependency of Argentina. Free trade between these republics has been proposed, but not yet realized. Quebracho extract, used in tanning, is a valuable product, and still more so is the *yerba maté*, which provides the popular beverage of Argentina, Uruguay, and Chile. The pastoral industry has made great advance in recent years through the improvement of breeds, and through the establishment of freezing plants. The high prices of the Great War gave an impetus to this movement, but the country suffered much from the succeeding economic crisis. The chief exports are hides, *yerba maté*, oranges, tobacco, timber, meat, cattle, and quebracho extract. Foreign war, civil strife, political disturbances have retarded progress; so also have scanty population, primitive methods of life, scarcity of labour and of machinery.

HISTORY. The past history of Paraguay comprises two distinct stories, that of the early Spanish settlement at Asunción, and that of the singularly interesting Jesuit missions on the Alto Paraná. It is a fallacy to find the origin of the republic in the missionary work of the Jesuits. Those missions certainly facilitated the growth of



Paraguay flag,
red, white and
blue

Asunción and of the other Rio de la Plata settlements, including Buenos Aires, by the orderly pacification of a neighbouring territory and by providing some defence against enemies, whether European or indigenous. But the curious politico-religious community founded by the Jesuits was practically a separate and rival state, remote and excluded from the Spanish settlements. It lay chiefly within the present confines of the Argentine Republic; and after the expulsion of the Jesuits in 1767 and before the birth of the Paraguayan Republic, which sprang in fact from Spanish conquest and settlement in the region of the river Paraguay, it practically dissolved.

The early exploration in these regions by Sebastian Cabot and others can only be mentioned here. Continuous history begins with the foundation of the city of Asunción in 1536. When, five years later, the infant Spanish settlement at Buenos Aires was abandoned, Asunción, in the country of the peaceable and amenable Guaranis, became the capital of the whole Rio de la Plata region, and the headquarters of all Spanish enterprise upon the Atlantic side of the continent. Buenos Aires, re-founded in 1580, was a colony from Asunción, and did not receive separate administrative recognition until 1620. But to a much later period the term Paraguay was commonly used to designate the whole Rio de la Plata region as far as Patagonia. However, from 1620 to 1776 Paraguay proper was a distinct province, with a royal governor residing at Asunción and subordinate to the viceroy of Peru.

The true founders of Paraguay were the conquistadores and governors of the 16th and early 17th centuries, of whom the most notable were appointed by the Spanish settlers themselves, by virtue of a decree which empowered them to elect a governor in case of accidental vacancy. The early settlers put a liberal interpretation upon this privilege, deposing and replacing unpopular governors upon occasion. Later the municipality of Asunción claimed the exercise of this privilege; and this almost self-contained Spanish settlement, remote from royal and viceregal authority, pursued a singularly agitated and independent political course.

In the middle of the 17th century the bishop of Asunción made himself governor with the support of the town council and the citizens, defying superior authority until reduced by force of arms. Again, from 1720 Asunción acted

almost like an independent city-state, accepting governors approved by the people and resisting all outside authority. Finally, in 1736, the revolt of the *comuneros*, the Paraguayan insurgents, in Asunción was put down by a regular military expedition from Buenos Aires, and the country reduced to submission. From 1776 to 1820 the province of Paraguay formed part of the newly-constituted viceroyalty of Buenos Aires.

In 1811 Buenos Aires, having achieved independence, sent a force up the river under Belgrano to offer to the Paraguayans independence and union with the Argentine provinces. Paraguay declined union

of war Paraguay was overwhelmed, devastated, and depopulated. When the struggle ended with the death of Lopez in 1870, nearly all the men and most of the women had perished. Victory rested with the three allied republics, but the true heroes of the war were the poor Indian peasants of Paraguay, who, in frail canoes, attacked armed ships of war and struggled to the death against overwhelming odds.

The present constitution of Paraguay dates from 1870; the country has since enjoyed external peace, but has suffered from a succession of internal conflicts and presidential "revolutions." The catastrophe of 1865-70 has left its traces, yet the degree of recovery has been remarkable. Paraguay maintained complete neutrality during the Great War.

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Parahyba. State, city, and river of N.E. Brazil. The state, which has an area of 28,854 sq. m., fronts the N.E. coast and lies between Rio Grande do Norte and Pernambuco. From March to June is the rainy season. The coast has several bays and the large estuary of the Parahyba river, all spoilt as harbours by coral reefs. Cotton, cotton-seed, and manioc (tapioca) are the principal products. The river rises in the mts. on the border of Pernambuco and flows E. for 270 m. The city is situated on the Parahyba estuary; Cabedello, 14 m. down the estuary, is its outpost; both export timber, cotton, and cotton-seed. It has rly. connexion with Natal to the N. and Pernambuco to the S. The lower town is the commercial quarter and contains the 17th century cathedral. Pop., state, 520,000; city, 20,000.



Paraguay. Map of the South American republic

but resolved upon independence, deposing the royal governor of Asunción, and setting up a local administration which soon merged into personal despotism under an able lawyer, Francia. From 1816 to his death in 1840 Francia exercised an absolute tyranny, a long reign of terror. He sealed up the country, forbade all commerce, all communication with the outside world, and, with rare exceptions, allowed no one to cross the frontier in either direction. Francia was succeeded by Carlos Lopez, who opened the river to commerce, but continued Francia's system of internal tyranny. In 1862 he was succeeded by his son, Francisco Lopez, an audacious megalomaniac who aimed at setting up a quasi-Napoleonic empire in S. America. He committed acts of war against Brazil, violated Argentine territory, and brought upon his country a combined invasion by the armies and ships of Brazil, Argentina, and Uruguay. During five years



Parahyba, Brazil. Church of S. Francisco

Parahyba do Sul. River of Brazil. It rises in the Serra do Mar in São Paulo, and flows N.E. across the state of Rio de Janeiro in a narrow valley to enter the Atlantic below Campos, after a course of 500 m.

Paraldehyde. $C_6H_{12}O_3$. Colourless liquid with burning taste. It is used in medicine to produce sleep, and is often employed in asylums as a hypnotic in mania and melancholia.

Parallax. In astronomy, the apparent displacement of a celestial object by a change in the position of the observer. A simple illustration of an apparent displacement of this character occurs to a passenger observing a church steeple from a moving train: the steeple may be first S.E., then E., and last N.E. If the distance between the positions of the first and last observations is known, then the distances between these positions and the church steeple can be calculated. For astronomical purposes the earth in its yearly revolution resembles the moving train, and thus the measurable apparent shifting of various stars is of great importance as furnishing a method of ascertaining their distances. They are so great that the parallax of a star is obtained by taking as a base line the radius of the earth's orbit. The small angle is found then by measuring the apparent change of place in the position of a star caused by the earth's actual change of place in its journey round the sun. The parallax of the nearest star Alpha Centauri is only '75", equivalent to a distance of over four light years.

Solar parallax is obtained by taking the earth's diameter as a base line. The best way to obtain it is indirectly, by observing the parallax of one of the asteroids, from which the distance of the sun can be easily calculated. Solar parallax by observation of the asteroids has been obtained at 25 different observatories, in order to obtain a result as accurate as possible. It is one of the most important figures in astronomy, as the distance of the sun from the earth is an astronomical measuring line. The asteroids Iris, Sappho, and Victoria were chosen for this combined effort to obtain an accurate result, and the figure $8.802''$ was obtained, corresponding to a distance 92,874,000 miles between the earth and the sun. Solar parallax has also been calculated from considerations of the aberration of light which causes an apparent shift in the position of an object due to the movement of the earth, and the velocity of light.

Parallel. In geometry, term used for straight lines in a plane which do not meet however indefinitely they are produced, i.e. they always remain at the same distance from each other.

By an extension of the Euclidean definition, it is used for things that are similar, e.g. parallel passages in literature. In gymnastics, parallel bars are two bars used chiefly for hand and arm exercises. A parallel ruler is one which enables one straight line to be drawn parallel to another. In electricity, accumulators are said to be connected in parallel when all the positive poles are connected to one wire and all the negative poles to another.

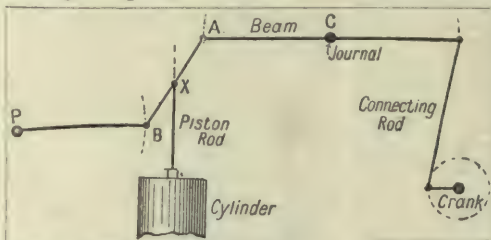


Fig. 1. Watt motion applied to a beam engine. See text

In machinery, parallel motion is a mechanism for producing straight-line motion by means of linkwork. The best known, from which others have been developed, are those invented by Watt and Scott Russell. Fig. 1 is the Watt motion, as applied to a beam engine. The beam is supported at C. Link P B rotates about P. A and B are connected by link A B, to which the end of the piston-rod is attached. If $AC : PB :: B X : A X$ the circular motions of B and A will counteract one another and X will travel in the line of the piston-rod.

In the Scott Russell motion (Fig. 2) link P X swings about P and is attached to the middle of bar A B. $P X = A X = B X$. B is pivoted on the end of the piston-rod, and A is pinned to a block moving in a slide. See Linkages.

Parallel. Term for a type of trench used when attacking fortresses, introduced by Vauban in

1673. The main method of attack for the infantry consisted of pushing forward by means of zig-zag trenches in order to breach the walls. The workers on these trenches had to be protected from sorties of the besieged garrison, and for this purpose parallels were arranged at intervals for the accommodation of the guards, and consisted of trenches sited at right angles to the direction of the attacking trenches and parallel to the face of the work being attacked. New parallels were made at intervals as the work progressed, so that the guards were always close up to the working parties. See Fortification.

Parallel Bars. Appliance used in gymnastics. They consist of a pair of horizontal bars supported

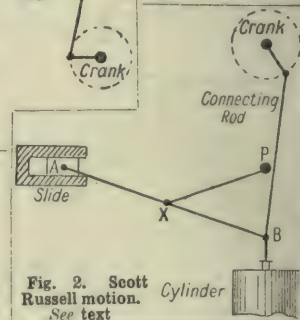
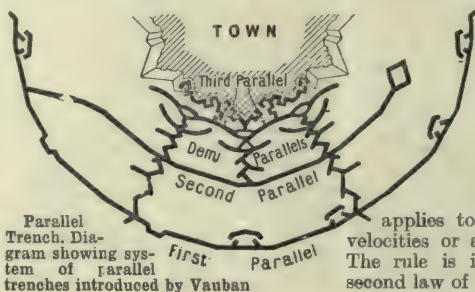


Fig. 2. Scott Russell motion. See text

on a framework which allows of their being adjusted to six feet or less from the ground. Supporting himself by a hand on either bar, the gymnast is able to perform various exercises. See Gymnastics; Physical Training.

Parallelepiped. Solid figure contained by six parallelograms of which every two opposite faces are parallel. A brick is a rectangular parallelepiped.

Parallelogram of Forces. In mechanics, a rule for finding the resultant of two forces. The rule is as follows. If two forces acting at a point O are represented in magnitude and direction by two straight lines O A and O B, they are together equivalent to a single force, represented by the diagonal O C of the parallelogram constructed on the two straight lines passing through the point. The rule also applies to displacements and velocities or any vector quantity. The rule is implied in Newton's second law of motion. See Vector.



Paralysis. Loss of power to contract muscles or loss of sensation. Two widely different forms of paralysis occur, namely functional paralysis, which is a manifestation of hysteria, and is not associated with recognizable changes in the nerves, and organic paralysis, which is due to disease or destruction of a nerve.

Hysterical paralysis most frequently follows a severe shock, either mental or physical. Functional paralysis may also follow an organic injury, with or without involvement of a nerve, which has necessitated the patient keeping a limb in a fixed position (as in a splint) for a considerable time. Any form of organic paralysis may be simulated by the functional type. A group of muscles alone may be affected, or there may be paralysis of an arm or a leg, or more than one limb. With the loss of power in the muscles there may be loss of sensation in the skin. A functionally paralyzed limb may be quite limp and flaccid, or there may be a firm contracture of groups of muscles, the latter condition being more frequent after a wound.

Functional paralysis is due to a fixed idea in the mind of the individual, following the shock he has received, that the limb is actually powerless, an idea which it is often difficult to dispel. Treatment accordingly is directed towards breaking down this resistance and inducing him to use the affected muscles. Sometimes recovery occurs suddenly, as a result of a shock or fright. Usually, however, recovery under treatment is brought about by a process of constant persuasion and re-education in the use of the muscles.

Organic paralysis is a symptom of many diseases of the nervous system, which are accompanied by degenerative changes in the nerves, or it may be the result of injury to a nerve. When the nerve which is the immediate supply of a group of muscles is severed, as for example by a bullet, the paralysed muscles are limp, show marked wasting, and eventually lose the power of reacting to electrical stimuli. Paralysis may also be due to injuries of nerves or nerve centres, which do not immediately supply muscles, but control the nerve cells which do supply the muscles, as in the paralysis of limbs following an injury to the brain, or haemorrhage into the brain from rupture of an artery, as in apoplexy.

The diseases most frequently responsible for organic paralysis are apoplexy, locomotor ataxia, disseminated sclerosis, and anterior poliomyelitis or infantile paralysis.

Treatment should be directed towards maintaining the tone of the muscles for as long as possible by massage, electricity, and appropriate passive movements. See Apoplexy; Hemiplegia; Infantile Paralysis; Paralysis Agitans; Paraplegia; Spotted Fever.

W. A. Brend, M.D.

Paralysis Agitans OR SHAKING PALSY. Chronic disease of the nervous system. It usually occurs in people past middle life, men being more frequently affected than women, and is incurable. The cause is unknown, but exposure to cold and wet, and mental anxiety or shock appear to be precipitating factors in some cases. The disease comes on gradually, and is characterised by tremor, which may occur in the hands or feet or both. Movements of the thumb and fingers resemble those that would be made in rolling a pill. Sometimes the head is also affected by the tremor. Weakness of the muscles occurs, and the movements of the limbs become slow and stiff. The attitude of the patient is characteristic, the head being bent forward and the back bowed. The face is expressionless and mask-like.

Paramaribo. Capital of Dutch Guiana. The city is situated at the confluence of the Surinam and Commewine rivers, some 10 m. from the sea. The commodious harbour is fortified by the two forts of Zeelandia and New Amsterdam. Coffee, cocoa, sugar, and rum are exported. Pop. 37,000.

Paramoecium OR SLIPPER ANIMALCULE (Gr. *paramēkēs*, oblong). Lowly infusorian animal belonging to the phylum Protozoa. Just visible as a speck to the naked eye, it is common in infusions of decaying vegetable matter, and can usually be secured by steeping rotting leaves in water for a few days. It is oval and flattened in form, one end being thicker than

the other, and it swims freely by means of the vibratile cilia with which it is covered. There is no stomach, the food particles being assimilated by the body protoplasm generally. Reproduction takes place by fission, each animal splitting into two.

Paraná. Second largest river in S. America. With the Uruguay, it occupies the Plate Basin between the Brazilian Highlands and the Andes of Bolivia; it drains the great lowland which extends N. from Buenos Aires to the Matto Grosso. The Paraná begins at the confluence of the Paranahyba and Rio Grande, flows S.W. as far as Posadas, W. until it receives the Paraguay, and then S.S.W. past Corrientes to Rosario, whence it goes S.E. to the Rio de la Plata. In its upper course in Brazil it receives many rapid rivers. Above the great Guaira Falls the main stream is navigable for 400 m.

Below the falls the Paraná forms the boundary of Paraguay; below Posadas are the Falls of Apipé, below which navigation is uninterrupted for vessels of 300 tons. Below Corrientes it flows through Argentina past La Paz, Santa Fé, Paraná, and the great river port of Rosario; in this section it receives its second great tributary from the Andes, the Salado. Its total length is estimated at 2,500 m. It was first ascended as far as the Paraguay by Sebastian Cabot in 1526.

Paraná. State of S. Brazil. It extends between the Paraná river on the frontier of Paraguay and the Atlantic Ocean. The Serra do Mar rises sharply from the shore as part of the Brazilian Highlands, from which the long slope to the W. is drained by the Paranapanema, Ivahy, Piquiry, and Iguassú, all affluents of the Paraná river. The W., the narrow coastal lowland, and the mts. are all forested, and the forested lowlands are hot,

damp, and unhealthy. Much timber is cut from the forests. Maté, cotton, cereals, and fruits are cultivated on the fertile uplands, and rice on the coastal lowlands. Curitiba is the capital. Its area is 85,451 sq. m. Pop. 410,000.

Paraná. City of Argentina capital of the state of Entre Rios. Situated on the river Paraná



Paraná, Argentina. Plaza and cathedral of S. Miguel

opposite Santa Fé, with rly. connexions with Concepción on the Uruguay, and with Buenos Aires, 350 m. to the S.E., it is an important river port and exports the agricultural produce of the state. The cathedral is reputed to be the most beautiful in Argentina. Local industries are flour-milling and meat-packing. From 1852 to 1861 it was the capital of Argentina. Pop. 65,000.

Paranagua. Seaport of Brazil. Situated on the bay of the same name in the state of Paraná, it has rly. connexion with Curitiba, 80 m. to the W., São Paulo, and Rio de Janeiro. Maté, sugar, rice, and cereals are exported. Pop. 6,000.

Paranahyba. River of Brazil. One of the headstreams of the Paraná, its waters ultimately reach the Plate Estuary. W. of the Brazilian Highlands a wide depression extending to the Goyaz Plateau is occupied by the Paranahyba and Paraná, which flow S.W. for 500 m. and receive numerous tributaries from the heights on both sides. The name Paraná is applied to the main river below the confluence of the Paranahyba with the Rio Negro. The Paranahyba separates the Brazilian states of Goyaz and Minas Geraes.

Paranoia. Form of mental disorder characterised by delusions, mainly of persecution. The delusions are systematised, i.e. the patient finds reasons for his beliefs, and endeavours to conduct his life in accordance with these beliefs. In the early stage of the disease the patient appears to be merely self-centred and morbidly suspicious, perhaps continually complaining that people have slighted him, and the most trifling action may be seized upon as an insult. When the condition is more developed, he may believe that people in the streets are jeering at him, or that efforts are being made to poison him or ruin his business. Hallucinations may occur, and he may hear voices constantly persecuting him. A frequent delusion in such patients is that other persons can read their thoughts. Delusions pertaining to matters of sex are common.

Parapet (Ital. *parare*, to guard; *petto*, breast). Term in architecture denoting a low wall rising from the lower level of a roof. In the medieval castle it was generally battlemented, and the more elaborate examples are pierced with tracery as well. The parapet was revived in Georgian architecture, in combination with the hipped roof, but in the form of a balustrade.

As a military term a parapet is the head cover provided on the forward

face of a trench or fortification to protect the occupants from the effects of frontal fire or fragments of projectiles bursting in front of the position. See Battlement; Castle; Cover; Entrenchment; Firestep.

Paraphernalia (late Lat. from Gr. *para*, beside; *phernê*, dower). Term of English law. It is descriptive of articles of personal adornment and apparel given by a husband to his wife, not as her absolute property, but for her use. Before the Married Women's Property Act of 1870, subsequently amended, he could sell them or otherwise dispose of them, but on his death they became the wife's as against the husband's executors.

Paraphrase. Rendering in other words of anything said or written, generally for the purpose of elucidation. The recasting of the works of great writers into other words in the same language was a practice recommended by the ancient teachers of rhetoric to their pupils with a view to their obtaining command of vocabulary and syntax. Formerly paraphrase was restricted to such recasting of prose, metaphor being the term applied to poetry. The most famous example of paraphrase generally known to-day is the metrical version of the Psalms in use in the Presbyterian churches of Scotland.

Paraplegia. Paralysis affecting both sides of the body. See Locomotor Ataxia; Myelitis; Paralysis.

Pará Rubber Tree (*Hevea brasiliensis*). Tree of the natural order Euphorbiaceae. A native of Brazil, it has alternate leaves, divided into five leaflets, finger fashion. The bell-shaped flowers are greenish white and the sexes separate. The tree abounds in a thin, milky juice which exudes when incisions are made in the trunk. It is collected in earthen vessels and hardened by exposing it to smoke, when it becomes crude rubber or caoutchouc. See Rubber.

Parasite (Gr. *parasitos*, one who eats at another's table, from *para*, beside; *sitos*, food) Name applied to an organism, animal or vegetable, which lives upon or within another organism and

nourishes itself at the expense of its host. The parasite may live permanently on or in its host, as in the case of intestinal worms; or it may only visit its host, as in the cases of the flea and mosquito. Animals may be parasites on other animals, as the ticks and flukes; or on plants, as the scale insects and aphides. Plants may be parasitic on other plants, as the mistletoe; or on animals, as the fungus which produces ringworm.

Speaking generally, parasites in the animal world usually show evidence of degeneration. Not having to travel in search of food, they tend to lose their organs of locomotion; thus the flea has lost its wings and the tape-worm its cilia. Receiving their food in an assimilated form from the tissues of their host, they have not to digest it in any complete fashion, and consequently the alimentary canal tends toward degeneration or total disappearance. In the case of internal parasites, which cannot travel in search of mates, hermaphroditism is a common phenomenon. Parasites also appear to have developed immunity against the gastric juices or other defensive measures of their hosts, but this immunity only avails in the case of their true hosts.

Parasitism occurs in most of the phyla of the animal kingdom. Among the vertebrates the only known example—and that a very doubtful one—is the hag-fish, which bores into the bodies of fish and feeds upon them. A few forms of molluscs are parasitic on sponges and echinoderms; the arachnida are represented by the ticks and mites, the crustaceans by certain lowly types which live upon the bodies of fish, and the insect parasites on both animals and plants are known to everybody. Most of the bacteria which invade human bodies and cause many diseases are parasites belonging to the vegetable kingdom. Thus parasites are not merely uninvited boarders, but actual enemies of man.

In the vegetable kingdom parasitism is a common phenomenon, especially among the fungi, which, being without chlorophyll, cannot assimilate inorganic food, and are therefore dependent on other organisms. The mistletoe is a well-known example, the dodder does serious damage to the clover crops, and many fungi cause disease and ultimate death to trees. See Bacteriology; Commensalism; Dodder; Malaria; Symbiosis; consult also Handbook of Practical Parasitology, M. Braun, 1910; Some Minute Animal Parasites, H. B. Fantham and A. Porter, 1914.



Parapet. Example of Early English parapet in Salisbury Cathedral

Parasol (Ital. *parare*, to ward off; *sole*, sun). Light form of umbrella used for protection against the sun. Parasols are usually made of silk or other light material, although in China and Japan, where they are extensively used by both sexes, many are made of coloured paper. Among some uncivilized peoples the right to carry a parasol is confined to the chiefs. See Umbrella.



Parasol of paper, as used in Japan

Parasol. In aeronautics, name applied to the type of monoplane wherein the main wing is raised above the level of the body. In the more normal type of monoplane the pilot's head is above and behind the wings. The wing was found to interfere with the pilot's view.

Paravane. Naval invention employed against mines during the Great War. The main credit for its invention and development was attributed by the Royal Commission on Awards to Inventors to Commander C. D. Burney, R.N. The action of the paravane was to deflect the mine from the side of the ship, cut through its mooring cables, and render it harmless and easy to destroy. The apparatus consisted of a torpedo-shaped body fitted with hydrovanes, to one of which was attached a float and to the other a weight, and it had a rudder which regulated the depth of flotation by means of a hydrostatic valve.

Paravanes were used in pairs, towed one on either side of the ship by wires. The hydrovanes were so formed that, when the tow-line became taut, the machine submerged to the determined depth, and was steered at a proper distance from the side of the ship. The towing wire was attached to a frame which connected the plane of the paravane with its body, and was furnished with a heavy cutter bracket containing a serrated knife-blade, by which the mine mooring line was severed. A pair of paravanes, running one on either beam of the ship, gave complete immunity from injury from anchored mines. Several classes of this apparatus were used by warships, and the merchant marine had a particular type known as the Otter. See Submarine; consult also *The Crisis of the Naval War*, Viscount Jellicoe, 1920.

Paray-le-Monial. Town of France. In the dept. of Saône-et-Loire, it stands on the Bourbince and the Canal du Centre, 48 m. W.N.W. of Mâcon, and is a junction of the Paris-Lyons Rly. There are oil refineries, tanneries, and manufactures of tiles and ceramics. The most important building is the convent of the Visitation, where the nun, M. M. Alacoque (d. 1690), was supposed to have had visions of the Saviour. Pop. 5,000.

Parcae. In classical mythology, the Latin name for the Fates, goddesses who presided over the destiny of man. The Greeks called them Moirai. See Fates.

Parcel Post. Postal service for the conveyance of bulkier and heavier packages than are carried by the ordinary letter post. In the United Kingdom a parcel post was recommended by Rowland Hill in 1842, but the scheme was not put into operation until 1883. Headquarters for the new dept. were provided in 1887, and a system of coaches started in 1892.

Parcels must not exceed 3 ft. 6 ins. in length, or 6 ft. in length and girth combined, and must be handed in at the post office. In 1924 the inland rates ranged from 6d. for 2 lb. weight and under, to 1s. 3d. for parcels of 11 lb., the limit of weight. Parcels for abroad need a customs declaration. Special rates are granted for parcels to places within the British Empire. See Post Office.

Parchim. Town of Germany, in Mecklenburg-Schwerin. It is on the Elde, 23 m. S.E. of Schwerin. The church of S. George dates from the 14th century. Pop. 11,000.

Parchment. Writing material made of the skins of animals, more especially of those of sheep and goats. It is supposed to have been first used as a substitute for papyrus in the 2nd century B.C., and derives its name from Pergamum, a city of Mysia, where it was first employed. In preparing parchment the hair or wool is first removed, and the skin is then steeped in lime, and stretched on a framework and scraped with a special knife. After being sprinkled with powdered chalk or lime, it is again rubbed to make the surface smooth.

Coarse parchment is made of the skins of he-goats, calves, or asses. Parchment for writing remained in general use until superseded by paper. Legal documents from being so often written on parchment are sometimes known collectively as parchments. Parchment paper, or vegetable parchment, is a tough, semi-translucent paper, prepared by dipping unsized paper in diluted sulphuric acid. See Paper; Papyri.

Pardo-Bazan, EMILIA, COUNTESS (1852-1921). Spanish novelist. Born at Corunna, Sept. 16, 1852, of distinguished parentage, she was brought up amongst a brilliant society in Madrid. After her marriage to Don José Quiroga, she



Method of towing a paravane from the bow of a liner. Inset, near view of the paravane under water, about to cut the mooring cable of a mine

travelled in Europe, and divided her home-life between Madrid and Galicia, becoming not only an industrious writer, but a leading spirit in the Spanish feminist movement and an eloquent public speaker. Among her works are several novels and numerous literary studies and descriptions of her travels. She died May 12, 1921.

Pardon. Legal term for the forgiveness of a crime. It is in all countries the peculiar prerogative of the head of the state; although in constitutional countries he always acts upon the advice of his ministers. In Great Britain the king has the sole right of pardon and the home secretary advises him. He also has the legal right of pardon over the whole empire; but in practice he does not interfere in the Oversea Dominions, colonies, or India, where the exercise of the prerogative is left in the hands of the governor or viceroy. A pardon can be granted before or after trial except that no pardon can be pleaded to bar an impeachment. See Amnesty.

Pardon. Name given to popular religious gatherings and village feasts in Brittany. In rural districts, where the pardon is primarily devotional and associated with the quest of absolution, or cure of some bodily ill is the object of pilgrimage, the ceremonial begins overnight with vespers. Mass is said at 3 a.m., there is a procession in the afternoon, and sometimes one in the evening, and stalls are set up at which refreshments and souvenirs of the occasion may be purchased.

Pardubitz OR PARDUBICE. Town of Czecho-Slovakia, in Bohemia. It is 65 m. by rly. from Prague on the route to Brno (Brünn), on the Elbe (Labe). Spirits, sugar, farm machines, flour, and timber products are manufactured. The ruined castle of Kunetitz (1,000 ft.) crowns an isolated hill N. of the town. Pop. 20,400.

Paré, AMBROISE (1510-90). French surgeon. Born near Laval, Mayenne, he was apprenticed to a



Ambroise Paré,
French surgeon

barbersurgeon, and, serving with the army, gained such distinction that, although a Protestant, he became surgeon to Henry II and three other kings, Charles IX saving him at the massacre of St. Bartholomew. He wrote on gunshot wounds and anatomy, and was the first to use

ligatures for arteries after amputation, his rational treatment earning him the title of Father of modern French surgery. He died in Paris, Dec. 22, 1590. See Ambroise Paré and His Times, Stephen Paget, 1897.

Paregoric. Compound tincture of camphor. It is used as a sedative in conditions associated with irritating cough. It should not be given to children.

Pareira Brava (*Chondrodendron tomentosum*). Climbing shrub of the natural order Menispermaceae. It is a native of Brazil and the W. Indies. It has roundish leaves with the leaf-stalk attached to the middle, and silky on the underside. The flowers are greenish, in sprays, and the sexes separate. From the dried root a substance called pelosine is obtained, better known by the druggists' name of pareira brava.

Parent (Lat. *parere*, to bring forth). Primarily a father or mother. The word is also used for anything that begets something else, e.g. a parent plant. The complement of parent is child, and in all civilized countries a body of law deals with the duties of parents towards their children. See Children; Family.

Pargasite. In mineralogy, name given to a variety of hornblende found at Pargas, in Sweden. Green or bluish green in colour, it forms large shiny crystals. See Hornblende.

Parham. Village of Sussex, England, 10 m. from Petworth. The church of S. Peter is noteworthy. Close by under the downs is Parham Park, the residence of Earl French, with a deer park and a famous heronry. The house was built in the time of Elizabeth, her arms and date, 1583, being on the wall. The noted collection of objects of art and manuscripts was dispersed in 1920.

Parhelia (Gr. *para*, beside; *helios*, sun). Name for the mock suns of a solar halo. See Mock Sun.

Paria, GULF OR. Almost enclosed arm of the sea in N.E. Venezuela. The island of Trinidad is separated at its N.W. corner from the peninsula of Paria on the mainland by the passage called the Dragon's Mouth, and at its S.W. by that of the Serpent's Mouth from the Orinoco delta. These passages, discovered and named by Columbus in 1498, connect the Gulf of Paria with the Atlantic Ocean. The gulf receives the Guanipa and the Manamo, and is 100 m. from Trinidad to its most westerly point in the prov. of Sucre.

Pariah. Term popularly applied to natives of India who have no caste, and hence figuratively to any

social outcast. The Paraiyans, drum-beaters, from whom they take their name, numbering 2,448,295 (1911), mostly in Madras, are a low labouring caste with many sub-castes, and although classed as "untouchables" they



Pareira Brava. Foliage and sprays of, left, flowers, and, right, seed;

actually rank higher than several true castes.

Parian Ware. Felspar pottery fired at a moderate temperature. It is a pure white, marble-like substance, much used for figure work and vases. See Pottery.

Parima, SIERRA. Western section of the Venezuelan Highlands. From Roraima, where British Guiana, Brazil, and Venezuela meet, an elevated region separates the tributaries of the Amazon from those of the Orinoco. This area is known first as the Sierra Pacaraima and in the W. as Sierra Parima. From the latter, which contains Mts. Maraguaca and Duida, both over 8,000 ft. alt., descend the Orinoco and its tributary the Ventuari, the Casiquiare and the Branco, tributaries of the Rio Negro.

Pari-Mutuel OR TOTALISATOR. Method of backing horses by means of a machine, in vogue on the race-courses of the Continent and in some of the British colonies. The actual machine registers and indicates the number of tickets sold in connexion with each horse. On a board are exhibited the names of the horses competing in each race, and a person wishing to back a particular horse pays in, for example, £1 or several pounds to the officer in charge; when the race is decided all the money paid in over the various horses is divided between the backers of the winner, in proportion to the amount subscribed. Ten p.c. is deducted from the receipts of those persons who have backed the winner, and in countries, such as France, where the totalisator is run by the government, this percentage goes towards taxation, bringing in a large revenue.

PLAN OF PARIS

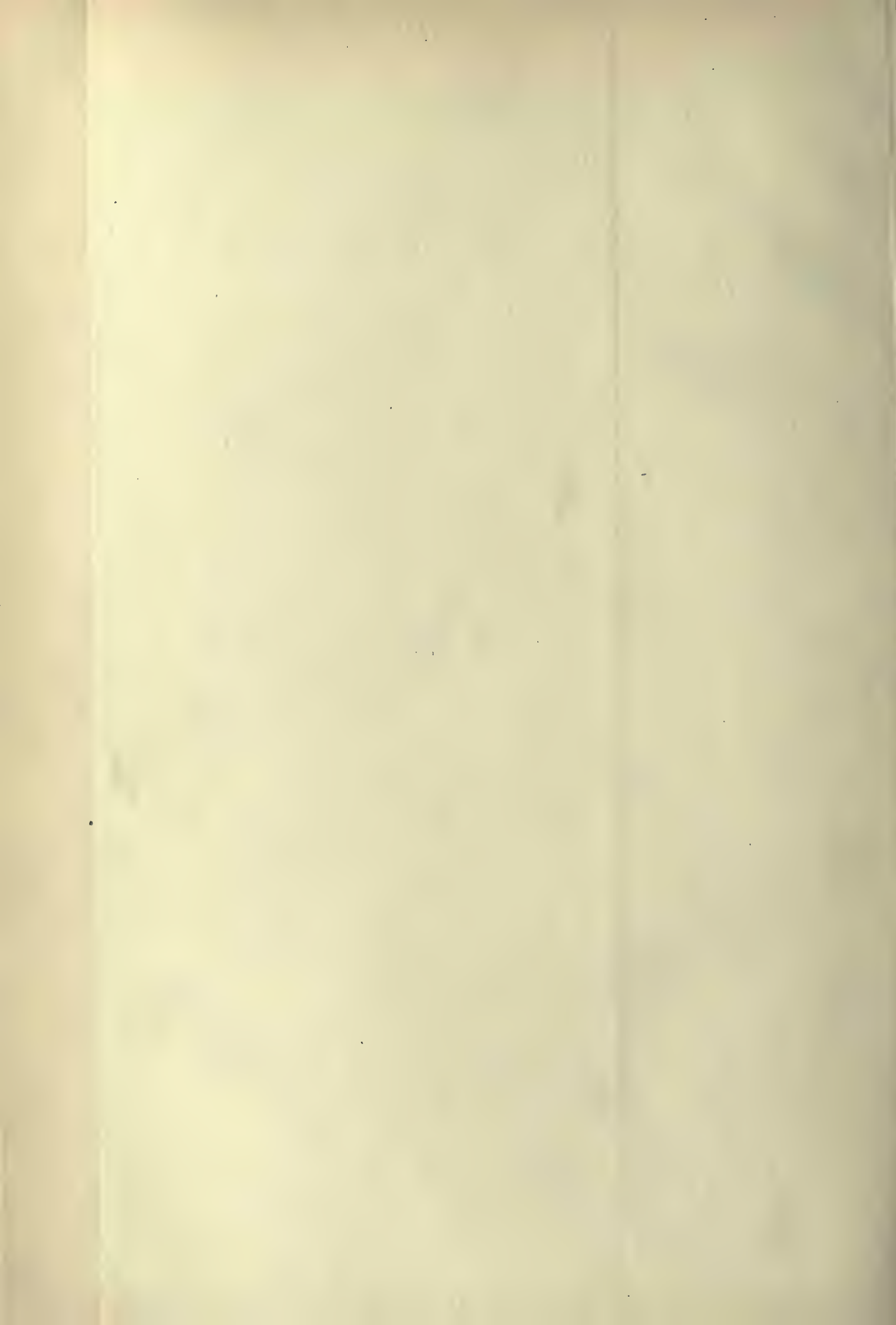


- ARRONDISSEMENTS**
- 1 LOUVRE
 - 2 BOURSE
 - 3 TEMPLE
 - 4 HOTEL DE VILLE
 - 5 PARTHENON
 - 6 LUXEMBOURG
 - 7 PALAIS ROYAL
 - 8 ELYSEE
 - 9 OPERA
 - 10 ENCLAVES SAINT-LOUIS
 - 11 POMPADOUR
 - 12 REUILLY
 - 13 CORBIGNY
 - 14 OBSERVATOIRE
 - 15 JAVEL
 - 16 LA MUELLE
 - 17 SAINT-LOUIS
 - 18 BUTTE MONTMARTRE
 - 19 BUTTE MONTMARTRE
 - 20 MONTMARTRE

Interchanging Stations

PARIS: DEPARTMENTS OF THE ARRONDISSEMENTS

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Parini, GIUSEPPE (1729-99). Italian poet and satirist. Born at Bosio, near Milan, May 22, 1729,

he became a priest in 1754, but is chiefly memorable for his satiric poem, *Il Giorno* (The Day), in four parts—Morning, Afternoon, Evening, and Night. The

first part, *Mattina*, 1763, created something of a sensation on its publication. Written in blank verse, the poem gives wonderful pictures of contemporary manners. Parini published about a score of odes, and in 1795 issued his *Epistle to Sylvia*. He died Aug. 15, 1799.

Pari passu (Lat., with equal pace). At the same time and rate.

Paris. Small genus of perennial herbs of the natural order Liliaceae. They are natives of Europe and temperate parts of Asia. They have creeping rootstocks, a simple stem, a single whorl of from four to nine leaves, and a solitary yellow-green flower, succeeded by a black berry. See *Herb Paris*.

Paris. In Greek legend, son of Priam and Hecuba. Soothsayers having foretold that Paris would bring calamity on Troy, the infant was exposed on Mount Ida, and cared for by shepherds, but afterwards became aware of his origin, and was received again into the royal household. While still a shepherd on Ida he delivered his famous judgement. The goddess of strife, enraged at not having been invited to the marriage of

Peleus and Thetis, had thrown a golden apple among the guests, inscribed "for the fairest."

Hera, Athena, and Aphrodite each claiming the apple, Zeus ordered them to submit to the judgement of Paris. Hera promised Paris sovereignty, Athena, military glory, and Aphrodite, the most beautiful woman in the world. Paris gave the apple to Aphrodite, who caused Helen, wife of Menelaus of Sparta, to fall in love with Paris. He carried her off to Troy, and thus provoked the Trojan War

During the war Paris distinguished himself little. He was worsted in combat with Menelaus, and was only saved by being carried off the field by Aphrodite. He is credited, however, with having caused the death of Achilles, by shooting him with an arrow in the heel. On the taking of Troy, Paris was wounded by one of the poisoned arrows of Philoctetes, and repaired to his long deserted wife, Oenone, a nymph of Mount Ida, who refused to heal him, and he returned to Troy to die. See *Helen of Troy*.



Giuseppe Parini.
Italian poet

PARIS: THE CITY AND ITS HISTORY

Julius M. Price, Author of *Bohemian Days in Paris*

Further information concerning the French capital is given in articles on the city's famous buildings, e.g. *Invalides*; *Louvre*; *Luxembourg*; *Notre Dame*; *Palais Royal*, etc. See *France*: *Seine*; also *colour map*

Paris, the capital of France, stands on the river Seine, in the heart of what was formerly the province of Île-de-France. It is about 230 m. from the mouth of the river, or 110 measured in a straight line; the distance from London to Paris by rly. (via Dover



Paris arms

and Calais) is 285 m., by air (Croydon to Le Bourget) 240 m.

The city is in the form of an irregular square, the bounds of which, 22 m. in length, are formed by the ramparts, built 1840-44 as part of the wider system of fortification surrounding the capital. These city fortifications, now in course of demolition, enclose an area of 19,279 acres. The northern parts

of the city, such as Montmartre, rise fairly steeply to a height of about 400 ft. The population in 1921 was 2,856,000.

The Seine, flowing in a great curve through the centre of Paris, divides the city into two, and the great modern capital has grown round the small island known as the Île de la Cité. The main feature in the street-planning is the system of broad, tree-planted boulevards intersecting the city. The Grands Boulevards extend from the church of the Madeleine to the Place de la Bastille, and were planned by Louis XIV on the site of the fortifications of Étienne Marcel. Though bearing different names, they form an uninterrupted thoroughfare and a most important artery, continued by the Place de la Nation to Vincennes. They are intersected by the Boulevards de Strasbourg and Sébastopol, while the Boulevards St. Germain, St. Michel, and Raspail are main arteries of the left bank dists., the Boulevards Haussmann and Courcelles of the N.W.

In other respects also Paris offers striking features of town-planning. The twelve magnificent avenues which branch star-wise from the Arc de Triomphe (Place de l'Étoile) include the Avenue des Champs Élysées, which runs straight down to the Place de la Concorde, making an uninterrupted vista across this to the Tuileries gardens and the Louvre. Other famous streets include the arcaded Rue de Rivoli, Rue St. Honoré, Rue Lafayette, Rue de la Paix, Rue Royale, and the Avenues de l'Opéra and du Bois de Boulogne.

There are several open spaces or places of noble proportions. The Place de la Concorde, the finest, took its present form in 1854, the Egyptian obelisk in the centre being raised in 1836, with two fine



Paris judging between the beauty of Hera, Athena, and Aphrodite. From the painting by Rubens

National Gallery, London

bronze fountains on either side; eight large statues symbolic of the great French cities surround the Place, and the Tuileries and Champs Elysées stretch to east and west.

These two gardens are the creation of Louis XIV, who was also responsible for the Invalides, the Colonnade of the Louvre, the Observatory, the Gobelins, the arches of St. Denis and St. Martin, and various boulevards and quays. The Place Vendôme, with its bronze column recording the achievements of the Grande Armée, is due to Napoleon I, who also gave Paris the triumphal arch on the Place du Carrousel, the Arc de Triomphe, the Madeleine, and the Bourse.

But modern Paris owes much to the Second Empire. Under the instructions of Napoleon III, Baron Haussmann, the famous prefect of the Seine, swept away many disfiguring portions, pierced broad boulevards, and laid out several fine places. The Opéra, the masterpiece of the architect Garnier, the extension of the Louvre, the central markets (les Halles Centrales), the new façade of the Palais de Justice, and, among many churches, those of St. Augustin and La Trinité, are also works which originated during this period.

The river is spanned by thirty bridges, many of remarkable architectural beauty, all of modern construction except, despite its name, the Pont Neuf, built 1578-1603, which joins the lower end of the Île de la Cité with both banks. The Pont Mirabeau, 1895-97, and the ornate iron and stone Pont Alexandre III, are among the latest. Along both banks stretch the quays, used for river traffic.

On the western part of the Île de la Cité stands the large Palais de Justice. Fire has destroyed parts at various times, and little remains of the original except the Tour de l'Horloge, dating from 1298. The lower portion of the Palais, the Conciergerie, has always been a prison, and its occupants in the Revolution included Marie Antoinette, Danton and Robespierre. Within the enclosure of the palace stands the 13th century Sainte Chapelle.

On the eastern end of the island stands the great cathedral of Notre Dame, and close by, on the right bank of the river, is the large modern Hôtel de Ville, which stands on the site of all its predecessors since 1357. The 16th century building was burnt down by the Communards, 1871, the present building being built between 1874-82. Mural paintings

and sculptures, notably the paintings of Puvis de Chavannes, decorate many of its handsome apartments and staircases.

The government buildings are chiefly on the left bank. The Chamber of Deputies, or the Palais Bourbon, was begun in 1722, and its present façade, a Greek temple with Corinthian colonnade, was added in 1807. The Chamber is semi-circular in form, with rising seats and galleries. The Senate sits in the Palais du Luxembourg. The ministry of foreign affairs is on the Quai d'Orsay.

The public gardens and parks of Paris are finely designed. Those in the heart of the city include the Luxembourg gardens, the Parc Monceau, the Jardin des Plantes, the Parc Montsouris, containing the meteorological observatory, and the Buttes-Chaumont, covering nearly 78 acres, the Parc du Champ de Mars, and the gardens of the Trocadéro. Outside the fortifications, but practically part of Paris, are the Bois de Boulogne and the Bois de Vincennes. The former covers an area of 2,158 acres, and includes the popular racecourses of Long-champs and Auteuil.

Paris is the capital of the arts. Its picture galleries and museums are among the most important in



Paris. Map of the city and its environs, showing the network of railways which connect the business centre with the suburbs



Paris. Air view of the central part of the city, looking east. 1. Pont-Neuf. 2. Théâtre du Châtelet. 3. Place du Châtelet. 4. Tour St.-Jacques. 5. Théâtre Sarah-Bernhardt. 6. Pont au Change. 7. Pont-Notre Dame. 8. Pont d'Arcole. 9. Hôtel-de-Ville. 10. Barracks. 11. Church of St.-Gervais. 12. Pont Louis-Philippe. 13. Pont-Marie. 14. Ile St.-Louis. 15. Pont St.-Louis. 16. Morgue. 17. Pont de l'Archevêché. 18. Notre-Dame. 19. Pont au Double. 20. Petit-Pont. 21. Hôtel-Dieu. 22. Barracks. 23. Tribunal de Commerce. 24. Sainte-Chapelle. 25. Préfecture de Police. 26. Pont St.-Michel. 27. Place St.-Michel. 28. Conciergerie. 29. Palais de Justice.

By courtesy of Compagnie Aérienne Française, Paris

the world: its studios and art schools exert their influence on the contemporary artists of almost all countries. The museum of the Louvre has unrivalled collections; that of the Luxembourg is devoted to modern artists. The Cluny Museum contains old furniture, tapestry, and medieval pottery. The Carnavalet Museum houses a collection illustrating the history of Paris itself throughout the ages. The leading annual exhibition of paintings by living artists, the Salon, is held in the Grand Palais.

The theatre holds an important place in the life of the capital, and the standard of acting is probably higher than on any other stage. The Comédie Française, under State direction, is in many respects the world's most important theatre.

Parisians are keen music-lovers. The Opéra and the Opéra Comique are popular institutions, and such concerts as those of the Conservatoire and of Colonne and Lamoureux are always well attended. Extremely characteristic of Parisian life, in a lighter vein, are the *chansons* which circulate to meet the mood of the moment.

As a university city, Paris holds high rank, offering generous advantages to students of all pro-

fessions and nationalities. The Latin quarter, as the district round the Boulevard St. Michel is called, is the college area, and here are situated the Sorbonne, the Faculté de Droit, and the Écoles des Mines, de Médecine, des Beaux Arts, and Polytechnique.

Paris is well provided with transport facilities. There is a network of shallow underground railways that link up the city in all directions. There are also motor omnibuses, and steam and electric tramways serving every quarter. On the river a fleet of small steamboats known as *Bateaux Omnibus* runs regularly between Charenton and Suresnes, while the districts immediately outside the ramparts are served by the Chemin de Fer de Ceinture. Two companies run the taxi-cabs and several horse-cabs.

The city is divided into twenty *arrondissements*, each sub-divided into four *quartiers*. At the head of each *arrondissement* is a mayor nominated by the government and assisted by adjoints. The mayor and adjoints do not, however, form part of the municipal council, which consists of 80 members, one for each *quartier*. They are responsible to the prefect of the Seine, who exercises a controlling veto.

The executive régime of the city of Paris is somewhat exceptional. The ordinary administrative powers, together with the control of the police, are shared by two prefects—the prefect of the Seine, who has control over all public services such as lighting, road- upkeep, charity organization, hospitals, pawnbroking, etc., and the prefect of police, who has charge of the police system, under which head come public safety, traffic, and the supervision of aliens. He also controls public morals, prison services, the law courts, police courts, fire brigade, lunatic asylums, and the Garde Républicaine.

Gas and electric light are in the hands of private companies who work under arrangement with the municipality. Water is supplied from the springs of Dhuis, Vanne, and Avre, and from the Seine.

In Paris and its suburbs nearly every form of French industry is carried on; in Marais, leather works and carriage building, in the Faubourg St. Marcel, gut-works and chemical products; cabinet-making and carpentry in the Faubourg St. Antoine; metallurgical works in the Faubourgs du Temple and St. Martin; sugar refineries, jam factories, breweries, and



Paris. West front of the cathedral of Notre Dame

tobacco works at Clichy, St. Ouen, St. Denis, and Pantin.

The strongly centralized character of French government gives Paris a peculiar importance in the national life. But it is well for the foreigner to remember that, neither in the traits of social life nor in political sentiment, is Paris always characteristic of France; its quick enthusiasms and reactions, its prolific and vehement journalism, its *affaires* and *scandales*, have all a quality essentially Parisian.

Paris was in its beginnings a mere cluster of fishermen's huts. The city is first mentioned in 53 B.C., when, according to Caesar, Lutetia was the chief town of the Parisii, a small Gallic tribe. It grew in importance under the Romans, but in the middle of the 4th century, when the emperor Julian lived there, the town was still "confined to what is now called the Île de la Cité. At the close of that century Lutetia was the diocese of a bishop, and was known as Parisia. The Franks captured the city in 493, and Clovis made it his capital about 508.

The advent of the Capetians inaugurated a brilliant period, and Paris began to extend on the right bank of the Seine. The building of the cathedral of Notre Dame was begun, and towards the end of the 12th century the city numbered about 100,000 inhabitants. The 14th and 15th centuries were times of great trouble for Paris, owing to internal strife. In 1420 the English took it, and only in 1436 did Charles VII re-enter his capital. Under Napoleon I Paris underwent great changes.

During the 19th century Paris knew war and revolution at first hand more than any great capital. In 1814 it was entered by the Allies; 1830 and 1832 saw barricades and insurrection; thousands were killed in the revolution of 1848; in 1870-71 came the siege; and in 1871 the insurrection and the commune, with a loss of life of over 50,000 and an estimated damage to property of some £32,000,000. But other landmarks in the city's history were the great international exhibitions of 1867, 1878, 1889, and 1900.

Throughout the Great War Paris was practically in the war zone. German aeroplanes bombed it as early as Aug. 31, 1914, and following the rapid advance to the Marne, it came within sound of gun-fire early in Sept.

In 1915-16 there were several Zeppelin and aeroplane raids on the city. In the latter part of 1917 Paris was constantly bombed by Gotha aeroplanes, which continued their raids throughout 1918. From March 23, 1918, Paris was frequently bombarded by German long-range guns, from a distance of about 75 miles. On May 27 the Germans again reached the Marne at Château-Thierry, where they were only 40 m. from the city. In all nearly 800 bombs fell on the city, killing 266, and wounding 603 persons. Paris was the scene of the peace conferences of 1919-20 (see Versailles, Treaty of). See Bois de Boulogne; Kiosk; Père-Lachaise.

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Paris. City of Texas, U.S.A., the co. seat of Lamar co. It is 97 m. N.E. of Dallas, and is served by the Texas and Pacific and other rlys. A large trade in cotton is carried on, and cotton-ginning, flour-milling, and the manufacture of cotton-seed oil, furniture, boxes, and bricks are among the chief industries. Paris was settled in 1841, incorporated in 1874, and became a city in 1905. Pop. 15,000.

Paris, BRUNO, PAULIN GASTON (1839-1903). French philologist. Born at Avenay, Aug. 9, 1839, son of the philologist Paulin Paris (1800-81), he became in 1895 director of the Collège de France, where he had succeeded his father as professor. His works and numerous contributions to periodicals deal chiefly with medieval French literature, of which he wrote a history. His biography of Villon is regarded by some as his best work. He died in Paris, March 6, 1903.



1. Church of the Sacré Coeur, Montmartre. 2. Champs Elysées, looking towards the Arc de Triomphe. 3. Pont Alexandre III, from the left bank of the Seine, with its single iron arch, 350 ft. long. 4. Church of the Madeleine from the south-west. 5. Façade and main entrance of

the Opéra. 6. Chamber of Deputies, from the Pont de la Concorde. 7. Place de la Concorde, from the Chamber of Deputies. Beyond the obelisk is the Rue Royale leading to the Madeleine; on the right side is the ministry of marine. 8. Façade of the Panthéon

PARIS : SOME ARCHITECTURAL FEATURES OF THE FRENCH CAPITAL

Paris, LOUIS PHILIPPE ALBERT, COMTE DE (1838-94). French prince. The elder son of Ferdinand,



duke of Orléans, who was the eldest son of Louis Philippe, he was born Aug. 24, 1838. His father died when he was four years old; consequently

Philippe Comte de Paris

he was the king's heir until the latter was deposed in 1848. The prince, known always as the count of Paris, lived with his mother in Germany and England, and saw something of the American Civil War. In 1871 he was allowed to return to France, and remained there until 1886, when he and his family were again exiled. He died Sept. 8, 1894, leaving two sons, known as the dukes of Orléans and Montpensier. He wrote a History of the American Civil War, 8 vols., 1874-75. See Bourbon; Orléans.

Paris, MATTHEW (c. 1200-59). English historian. Educated and ordained priest at St. Albans, 1217, he assisted and eventually succeeded Roger de Wendover in compiling the chronicles of England kept by the abbey. In 1248 he was sent on ecclesiastical business to Norway, but returned the next year, and continued his chronicle of English history, carrying it down to 1259, the year of his death. Paris was an original, learned, and accurate historian. His principal work is the *Chronica Majora*, the MS. of which is in the library of Corpus Christi College, Cambridge. An English trans. appeared in Bohn's Library, 1847. See Cradle.

Paris, DECLARATION OF. Term applied to four articles for the regulation of maritime warfare drawn up and agreed to by the plenipotentiaries of the powers who concluded in Paris in 1856 the treaty of peace after the Crimean War. The four articles are: (1) privateering is and remains abolished; (2) the neutral flag covers enemy goods, with the exception of contraband of war; (3) neutral goods, with the exception of contraband of war, are not liable to capture under the enemy flag; (4) blockades to be binding must be effective, i.e. the blockading force must be able to prevent virtually all ingress to and egress from the enemy coast. The government of the U.S.A. was asked to subscribe, but refused. Spain and Venezuela also refused to subscribe. During the war between the U.S.A. and Spain, however, both nations agreed to conduct their maritime

warfare in accordance with the principles of the Declaration. See Blockade.

Paris, TREATIES OF. Various international treaties signed in Paris. The following are the most important: (1) Treaty signed Feb. 10, 1763, by Britain, France, and Spain at the close of the Seven Years' War. By its terms France surrendered to Britain all the American possessions except Louisiana, but retained fishing rights off Newfoundland. In the West Indies Guadeloupe, Martinique, and St. Lucia were restored to her, while Britain retained Tobago, Dominica, St. Vincent, and Grenada. In Africa France recovered Goree and gave up Senegal. In India her trading stations were restored to her, on condition that they should not be garrisoned. Spain recovered the Philippines and Havana, but gave up Florida to Britain. (See Hubertusburg, Treaty of.)

(2) Treaty concluded May 30, 1814, by the Allies and France after the abdication of Napoleon I. By its terms France reverted generally to the frontier of 1790, but obtained some acquisitions, such as pieces of territory round Mons and Philippeville and a portion of Savoy. All her colonies were restored to her with the exception of Mauritius, which was ceded to Britain, and one or two other places. Britain also gained Malta.

(3) Treaty concluded between the Allies and France, Nov. 20, 1815, after the final overthrow of Napoleon I. By its terms France was deprived of the acquisitions she had gained by the treaty of 1814, and was required to pay an indemnity of £28,000,000.

(4) Treaty signed March 30, 1856, by France, Great Britain, Sardinia, Turkey, and Russia, at the close of the Crimean War. By its terms the Moldavian frontier was rectified, Russia was deprived of all control of the mouths of the Danube, while in the Black Sea merchant ships were to be allowed complete freedom of entrance, and the maintenance of naval forces by Russia and Turkey was limited.

Paris Basin. Term applied by geologists and geographers to designate the general dip of the rocks downwards towards Paris from the edges of a roughly circular area which extends from the Ardennes to the Auvergne, and the Vosges to the Brittany Highlands. It embraces most of the Seine valley and part of that of the Loire. Mainly lowland, very little of it extending beyond 1,200 ft., it is marked by a succession of scarps which curve with a centre near Paris. From the scarp top the land

slopes gently towards the centre, and steeply on the distant side. Each scarp marks the face of a type of resistant rock, usually limestone, but sandstone in the Argonne, overlying softer clays or marls, which can be detected at the base of the scarp.

Parish (Gr. *paroikia*, neighbourhood, from *para*, near; *oikos*, house). District committed to the care of one parson or minister having permanent cure of souls, known as the incumbent. The origin of the division of the country into parishes has been much disputed, some writers giving it an ecclesiastical ancestry, while others assert that the ecclesiastical parish system was based upon an earlier division for civil purposes. Parishes appear to have become general about the 9th or 10th century, possibly as the result of mission work radiating from the principal or bishop's church.

For civil purposes the parish is the smallest area, so far as local government is concerned. Its organization varies according as it is a rural or an urban parish. Most rural parishes have a parish council, its place in others being taken by the parish meeting. Urban parishes have no council save that of the urban district. The parish nowadays is an ecclesiastical district, and as such holds an annual meeting, mainly for church purposes, known as the vestry; and also a civil court for purposes of relieving the poor. For the latter purpose a number of parishes are united into a union.

In Scotland the parish, in addition to caring for its own poor, maintains a parish school, but the ratepayers do not meet in vestry. See Ecclesiastical Law; Local Government.

Parish Council. Council appointed under the Local Government Act of 1894. Every rural parish in England and Wales which has a population of over 300 has a parish council, while those with less than 300 inhabitants have one if the parishioners so desire, or two or more may be united under one council. These councils consist of a number of members varying from 5 to 15, are elected by the parish meeting held in March, and hold office for three years. Women are eligible for membership.

There are no parish councils in Ireland, but all Scottish parishes, whether urban, rural, or mixed, have them. These consist of a number of members varying from 5 to 31, and they look after the relief of the poor, the registration of births, marriages, and deaths, and vaccination.

Park. Literally, an enclosed space. It is used mainly in two senses, one for the enclosed land around a large house, such as Chatsworth, and the other for an open space set aside for the use of the public. The idea in both is that the land in question has been reserved. In the late 19th and 20th centuries, in London and other large cities and towns, much land was set aside for public parks, the amount being increased yearly. See Hyde Park.

Park, MILITARY. Enclosed space for storage of military stores, guns, etc. The term is also used for the actual material in the park. Parking vehicles is massing them in formation preparatory to a halt.

Park, MUNGO (1771-1806). British explorer. Born at Foulshiels, in Selkirkshire, Sept. 20, 1771, he



Mungo Park,
British explorer

was educated at Edinburgh, and became a surgeon. In that capacity he went on a voyage to India in the service of the East India Company in 1792. In 1795 he was employed by the African association to explore the Niger, and proceeded to Gambia, where, crossing the Senegal, he followed the Niger to within a short distance of Timbuktu.

His adventures, described in his *Travels in the Interior of Africa*, 1799, awakened great interest, and he was commissioned by the government to make another expedition in 1805. The attempt was disastrous. He had started with Anderson, his brother-in-law, and 45 British soldiers. Of this party only three soldiers were left when, after a canoe voyage of over 1,000 m., he reached the lower Niger. The end came near Yuri, where the canoe was upset and Park and his companions were drowned. One native rower escaped, from whom the facts were learned in 1812. See his *Journal of a Mission to the Interior*, 1815; Mungo Park and the Niger, J. Thomson, 1890.

Parker, SIR GILBERT (b. 1862). British novelist. Born at Camden East, Addington, Ontario, Nov. 23, 1862, he was educated at Trinity College, Toronto. He was for some time on the staff of The Syd-



Gilbert Parker

ney Morning Herald, and travelled in the East and through Canada. Turning definitely to literature, he drew largely upon the land of his birth in his novels, which include *Pierre and His People*, 1892; *The Trail of the Sword*, 1895; *The Seats of the Mighty* (dramatised by its author), 1896; *The Pomp of the Lavallettes*, 1897; *The Right of Way*, 1901; *Northern Lights*, 1909; and *The Judgment House*, 1913. *The World in the Crucible*, 1915, is a book dealing with the Great War. Sir Gilbert Parker has also written poems, and an excellent history of Old Quebec, 1903. He was Conservative M.P. for Gravesend, 1900-18. Knighted in 1902, he was created a baronet in 1915, and privy councillor in 1916.

Parker, SIR HYDE (1714-82). British sailor. Born at Tredington, Worcestershire, Feb. 25, 1714, he



Sir Hyde Parker,
British sailor

After W. Evans

entered the navy at the age of 24, after many years in the merchant service. As a captain his most notable feat was the capture in 1762 of a Spanish ship which brought him about £30,000 in prize money. He served long in the West Indies, and commanded the van in Rodney's action in 1780. In August, 1781, he met the Dutch admiral Zoutman off the Dogger Bank, and fought a fierce but indecisive action for nearly four hours. In Dec. 1782, while proceeding to the East Indies, Parker was lost in the 60-gun ship *Cato*.

Parker, SIR HYDE (1739-1807). British sailor. Second son of Sir Hyde Parker, he was commissioned in the navy in 1758. During the War of Independence he forced the entrance to the North River, 1776, and cut off the American supplies—a feat for which he was knighted three years later. Made a rear-admiral in 1793, he was Hood's captain of the fleet in the Mediterranean, and in 1796 went to Jamaica as governor. In 1801 he commanded the Baltic fleet against the Northern Confederation, with Nelson as second in command. The victory of the latter at Copenhagen, where Nelson put his blind

eye to the telescope that he might not see Hyde Parker's signals to retire, led to Parker's recall. He died March 16, 1807.

Parker, JOSEPH (1830-1902). British divine. The son of a stonemason, he was born at Hexham, April 9, 1830. He soon won local fame as a speaker, and in 1852 entered the Congregational ministry. After being in London at Moorfields for a short time, he went in 1853 to Banbury, and in 1858 to Manchester. In 1869 the historic Independent church in the Poultry, London, invited him to become its minister, and when there he secured the erection of a new building in Holborn Viaduct called the City Temple, opened in 1874. Here Parker was one of the most popular preachers of the day; there was thought behind his unconventional utterances and strange mannerisms. He died Nov. 28, 1902. He published a large number of books, including *The People's Bible*, 25 vols., 1885-95; and *The Paraclete*, 1874. See *City Temple*; consult also *My Life and Teaching*, J. Parker, new ed. 1889; *A Preacher's Life*, J. Parker, 1899; *J. Parker, D.D., Life and Ministry*, A. Dawson, 1901; *Dr. Parker and his Friends*, G. Pike, 1904.

Parker, LOUIS NAPOLEON (b. 1852). British dramatist and organizer of pageants. Born at Calvados, France, Oct. 21, 1852, he was educated abroad and at the Royal Academy of Music, of which he became a fellow in 1898. From 1873-92 he was director of music in Sherborne School. The pageant which he organized at Sherborne in 1905 was followed by similar and equally successful spectacles. He was also responsible as author, part author, or translator of many notable plays, including *Pomander Walk*, 1910; *Chantecler*, 1911; *Disraeli*, 1911; *Drake*, 1912; *Joseph and his Brethren*, 1913; and *David Copperfield*, 1914. He wrote the article *Pageant (g.v.)* for this Encyclopedia. See *Portrait Gallery of Contributors*.

Parker, MATTHEW (1504-73). English prelate. Born at Norwich, Aug. 6, 1504, the son of a cloth presser, he was educated at Corpus Christi College, Cambridge, where he associated with Latimer and other reformers. Ordained in 1527, he became chaplain to Anne Boleyn in 1535,



Joseph Parker
Elliott & Fry



Sir Hyde Parker,
British sailor

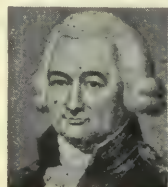
After Romney

and in 1537 to Henry VIII. In 1544 he was appointed master of his college, and was twice elected vice-chancellor of Cambridge University. He married the daughter of Robert Harlestone, an ardent reformer, in 1546, by reason of which he was in danger of his life throughout Mary's reign, and had to remain in concealment for several years. Elizabeth on her accession made him archbishop of Canterbury. Parker took a leading part in translating and publishing the Bishop's Bible, 1563-68. He made a collection of literary treasures and presented priceless MSS. to Corpus Christi College library. He died May 17, 1575.



Matthew Parker,
English prelate

Parker, SIR PETER (1721-1811). British sailor. Born in Ireland, the son of Rear-Admiral Christopher Parker (d. 1765), he went to sea young, and after serving in the W. Indies saw action at Toulon, 1744. In 1759, commanding the Bristol, he assisted in the reduction of Guadaloupe and, in 1761, of Belle-Île. He was given command of a squadron and sent to N. America, 1775. His disastrous failure to force the entrance to Charleston Harbour cast him under a cloud, but in 1777 he was made commander-in-chief of Jamaica. In 1782 he returned to England, and was made a baronet. He died Dec. 21, 1811.



Sir Peter Parker,
British sailor

Parkersburg. City of West Virginia, U.S.A., the co. seat of Wood co. It stands at the confluence of the Little Kanawha and Ohio rivers, 95 m. S.W. of Wheeling, and is served by the Baltimore and Ohio and other railways, and by steamers. Industrial establishments include foundries, oil refineries, lumber and flour mills, etc. Parkersburg was settled in 1773, incorporated in 1820, and became a city in 1863. Pop. 20,100.

Parkes. Town of New South Wales, in Ashburnham co. It is 300 m. by rly. from Sydney, and is a centre of fruit and wheat growing and gold-mining. Pop. 3,400.

Parkes, SIR HARRY SMITH (1828-85). British diplomatist. He was the son of a Walsall ironmaster, and was educated at King Ed-

ward's Grammar School, Birmingham. As a boy of 13 he went out to China and a year later became an official interpreter. He was one of the principal agents in negotiating a treaty with Siam in 1855.

After the capture of Canton by the British in 1857, Parkes was one of the three commissioners placed in charge, and though the Chinese set a price on his head he not only kept order in the city, but also explored a large hostile district. After the Peiho disaster, 1859, he secured Kowloon and Chusan as army bases, and took part in the Peking campaign. His party was treacherously arrested under a flag of truce and tortured. Most of them died, but Parkes was eventually released and was present at the capture of Peking. Appointed minister to Japan in 1865, he succeeded in enforcing the ratification of the 1858 treaty, and remained there 18 years. In 1883 he was transferred to China, where he died March 22, 1885.

Parkes, SIR HENRY (1815-96). Australian statesman. Born at Stoneleigh, Warwickshire, England,



Sir Henry Parkes,
Australian statesman

May 27, 1815, he emigrated to Australia at the age of 24 and settled in Sydney. Entering political journalism, he started *The Empire* newspaper, 1849, and agitated strongly against the importation of convicts and in favour of colonial self-government. Member of the legislative council in 1858, he was colonial secretary 1866-68, and in 1872 became prime minister on the free imports platform. Defeated in 1875, he returned to office for a few months in 1877, in which year he was knighted. He was prime minister again 1878-83, 1887-91. A consistent advocate of free trade, he was also the principal author of Australian federation. He died April 27, 1896. See his autobiography,



Sir Harry Parkes,
British diplomatist

Fifty Years in the Making of Australian History, 1892.

Parkhurst Prison. British convict establishment. Situated about one mile N. of Newport, Isle of Wight, it consists of two separate prisons. One is used as a convalescent prison for old and infirm convicts, and the other as an ordinary convict institution. The prison has accommodation for about 750 convicts, many of whom are serving long sentences. In 1921 a brass tablet, subscribed for by convicts, in memory of their fellow-prisoners who were liberated to fight and who fell in action in the Great War, was unveiled.

Parkin, SIR GEORGE ROBERT (1846-1922). British educationist. Born at Salisbury, New Brunswick, Feb. 8, 1846, and educated at St.



Sir George Parkin,
British educationist
Russell

John and at the University of New Brunswick, he became a schoolmaster, and then spent some time studying at Oxford and travelling through the Empire. He

next became principal of a school at Fredericton, and from 1895 to 1902 was headmaster of Upper Canada College, Toronto. Parkin wrote several books, and acted as correspondent for *The Times*. In 1902 he was selected as the first organizing secretary of the Rhodes Trust. He was created K.C.M.G. in 1920. His books include *Imperial Federation*, 1892; *The Great Dominion*, 1895; and *A Life of Sir J. A. Macdonald*, 1906. He died June 25, 1922.

Park Lane. London thoroughfare. Notable for its palatial mansions, it runs N.W. from Piccadilly to the Marble Arch. From its junction with Hamilton Place, where is a handsome fountain by Thornycroft, 1875, it has Hyde Park on its W. side. On the E. the houses include Londonderry House,



Park Lane, London, looking north-west from Thornycroft's fountain

built 1850; Dorchester House, 1851-53; Dudley House; and Brook House, where Sir Ernest Cassel died in 1921. Here, too, is the Lady Brassey Museum, and here was Gloucester House, residence of the duke of Cambridge. Lord Beaconsfield lived at No. 29 from 1839-72. Grosvenor House, called Gloucester House, 1761-1805, is in Upper Grosvenor Street. In Hamilton Place is the Bachelors' Club. Lady Blessington lived in Seamore Place; Lord Eldon and the 1st duke of Wellington in Hamilton Place; Sheridan and Bulwer-Lytton in Hertford Street; Lords Raglan, Palmerston, Brougham, and Sir Robert Peel in Great Stanhope Street; Lord Melbourne, C. J. Fox, and Florence Nightingale in South Street; and Sydney Smith in Green Street.

Park Lane Murder. British cause célèbre. Marguerite Dixblanc, a French cook, in a fit of temper murdered her mistress, Madame Riel, in a house in Park Lane, April 7, 1872. She looked the body in the pantry, where it was discovered next morning by the murdered woman's daughter. The murderess fled to France, and was arrested in Paris some days later. Dixblanc was sentenced to death but afterwards reprieved.

Parkman, FRANCIS (1823-93). American historian. Born at Boston, Sept. 16, 1823, Parkman



passed most of his youth in roaming about the woods, and had visited Italy before he took his degree at Harvard in 1844. The idea of

Francis Parkman

writing the story of America's past gripped him early, and with the object of studying primitive life at first-hand, he spent some time in the wild west, learning much about the Indians. His first book was *The Conspiracy of Pontiac*, 1851, and then he began his *England and France in the New World*. This was published in sections, each with a separate title, between 1865 and 1892. Parkman visited Europe several times to examine historical MSS. and sources. He died Nov. 8, 1893. See Lives, C. H. Farnham, 1901; H. D. Sedgwick, 1904.

Park Royal. Dist. of the parish of Twyford Abbey, Middlesex, England. It lies between Willeston, N.W., and Ealing, S.W., and has stations on the L. & N.W., G.W., and District Rlys. It was laid out

as a permanent showground of the Royal Agricultural Society of England, and the society's 64th annual show was held here June, 23-27, 1903; but after 1905 it was decided to dispose of the estate, which was later split up into building sites. During the Great War there was a munitions factory, and an A.S.C. camp here.

Parkstone. District of Dorset, England, forming a suburb of Poole. Lying between that town and Bournemouth, it has a station on the L. & S.W. Rly. Owing to the fine woods around it and other attractions, it is largely visited during the summer.

Parlakimedi. Town of Madras Presidency, India, in Ganjam dist. Situated in the S. of the dist. and an important road junction, it is connected by a short rly. with the Madras-Calcutta main line at Naupada. Pop. 18,400.

Parlement. Former French court of justice. The name is identical with that of parliament, although now used in a different sense. It was first given, as in England, to a meeting for discussion, but soon the Parlement of France developed into a court of justice, not a legislative assembly.

The early French kings heard disputes in person; in this work they were assisted by their vassals, and about the time of St. Louis this *curia regis* became definitely a court of law, not unlike the English court of exchequer. It sat permanently in Paris, and was therefore called the Parlement of Paris;

its active members became a class of regular professional judges, both clergy and laymen; the king ceased to preside over its sessions, giving way to a president. It was the court to which came cases about the royal estates, and appeals from the decisions of the king's baillis and seneschals. This process was completed before 1500, but soon the business of the parlement had increased so much that it was divided into several sections. It was also a court of peers, and, theoretically at least, all the peers of France were members thereof.

On the model of the Parlement of Paris parlements were established in many of the provinces, and at the Revolution they existed at Rouen, Rennes, Grenoble, Dijon, Bordeaux, Nancy, Besançon, Toulouse, and elsewhere. These were courts of appeal for the various provinces, having each a retinue of lawyers, including a president, councillors, and permanent officials of lower rank. The offices passed from father to son, or were sold openly to the highest bidder. A parlement could make regulations for the government of the province, and before coming into force all laws were registered by them. The parlements were most powerful in the 18th century, when they were the only remaining check on the royal authority. They were abolished at the Revolution.

Parley, PETER. Pseudonym under which the American writer Samuel Griswold Goodrich (*q.v.*) published many books for children.

PARLIAMENT: HISTORY & PROCEDURE

A. F. Pollard, M.A., Prof. of History, London University

In addition to this historical sketch, which concludes with a section on parliamentary procedure, there are articles on Commons, House of Lords, House of Commons, Division; King's Speech, etc.; also Government; Politics; Representation; Vote

Parliament originally meant a parley, and nothing more. The word is found in French early in the 12th century, and its use became common in England during the 13th, to denote any kind of conference. Its official use was restricted to specially full meetings of the king's council summoned four times a year, i.e. in every legal term, to consider public affairs and particularly legal cases which were especially difficult or required a novel remedy. To official gatherings of this kind the word was long restricted in both France and Scotland, and even in England a "parliament of the council" was described as a full parliament in the 14th century, even though no specially summoned peers were present, and no generally summoned representatives of the

commons. The really original work of Edward I, which was ultimately to distinguish the constitutional system of England from those of France and Scotland, was that, instead of keeping these parliaments of the council separate from the representative estates, he joined the latter to the former, and thus formed the Parliament which is at once a "high court"—indeed, the highest law court in the land—and also a popularly elected legislative and taxing body.

In both its aspects Parliament developed out of feudal ideas and conditions. Representation, unknown to the classical world, had been familiar in Anglo-Saxon times since the days when the reeve and four "best" men of the township began to attend the shire-moot. But the "best" men were the



On the extreme left are seen the towers of Westminster Abbey, showing over the Victoria Tower Gardens. Next come the Victoria Tower, house of the Clerk of the Parliaments, facing the river; the lantern over the central hall; the Clock Tower; and the Speaker's House, near to Westminster Bridge. On the river front, between the Clerk's and the Speaker's houses, is the Terrace
PARLIAMENT : HOUSES OF THE BRITISH LEGISLATURE AS SEEN FROM THE SURREY SIDE OF THE THAMES

possessors of the best tenements, and the obligation of attendance was often attached as a duty to the particular holding. After the Norman Conquest the rule was that if the lord or his steward chose to attend, his attendance excused the rest of the community; but if neither proposed to attend, then the township must send its reeve and four best men. The obligation lay on each community as a whole, and the boon of representation consisted not in the fact that the few had to attend, but in the fact that all the rest were thus enabled to stay at home. The same principle was extended from the shire-courts to the king's high court at Westminster. The greatest tenants-in-chief, whether bishops or barons, were required to come by individual writs of summons; they enjoyed no representation. But the lesser tenants-in-chief and the cities and boroughs were excused on condition of producing two representatives of each shire, city, and borough, to do their duty for them; and the lower clergy were offered the same advantage.

The business of these representatives was judicial and financial; politics could only come later when the people had acquired some political knowledge and capacity. Work of this kind had long been done on the representative principle in the shire-courts, and the summons to Westminster was due to the increasing superiority of the justice administered in the king's court to that which was administered in the local popular or feudal courts. Henry II had created a highly expert *curia regis*, with which no other court could compete, either in respect of competence or of power; and in spite of the reactionary attempts of the barons to limit by means of Magna Carta the jurisdiction of the king's court, it developed rapidly during the reign of Henry III.

Hearing of Pleas

New writs were devised to remedy abuses; no court could use them but the king's, and this meant that an increasing number of suitors were continually being attracted to Westminster Hall, where three committees of the king's court, common pleas, exchequer, and king's bench, were gradually formed to deal with their petitions. A parliament was properly a joint session of these committees, with the non-judicial members of the council, and its preliminary was a proclamation that all who had petitions to present should present them by a certain date; receivers and triers of petitions were then appointed, and the pleas were

heard. A further advantage of a parliament was that no fees were charged for a petition.

Parliaments of this sort were held before the business of representation was organized by means of the writs to the sheriffs and the regular return of elected representatives from the shires and boroughs; and agents of the shires and boroughs had often presented their legal business at Westminster. Simon de Montfort's parliament of 1265 was an extension and application of this kind of assembly to the political purpose of placing the royal authority in commission. Its defect was that it consisted solely of his partisans, and there is little evidence that this gathering had either the means or the will to perform the legal functions which long continued to be the principal business of parliament. The regularisation of this legal business was largely due to financial reasons. So long as land was the only source of direct taxation, only the chief landholders had been consulted.

Taxation and Representation

But as the financial necessities of government increased, the basis of taxation was extended to personal property and to a larger section of the community; and taxation became the mother of representation. At first the king sent his agents round to the shires and boroughs to negotiate locally for grants; but it was soon found more expeditious and profitable to summon agents of the localities to make their grants in the king's presence at Westminster. Thus representatives were summoned to attend the parliaments of the council (a) to make grants of taxation and (b) to present petitions for legal redress. They were not asked to legislate. What legislation there was took the form of ordinances in council, devised by the judges and enacted by the crown, and Edward I himself enacted most of his legislation before he summoned his model parliament of 1295.

These parliaments were held in a single chamber, at the upper end of which sat the king on his throne. At his feet sat the chancellor on one of the four woollsacks, arranged in a square on which sat the council, the judges of the king's bench on the chancellor's right, and the judges of common pleas on his left; opposite the chancellor sat the masters in chancery. The council was the original core of parliament, and all the other elements were accretions. Outside this inner square of councillors the bishops and abbots sat on benches running down from the right of the

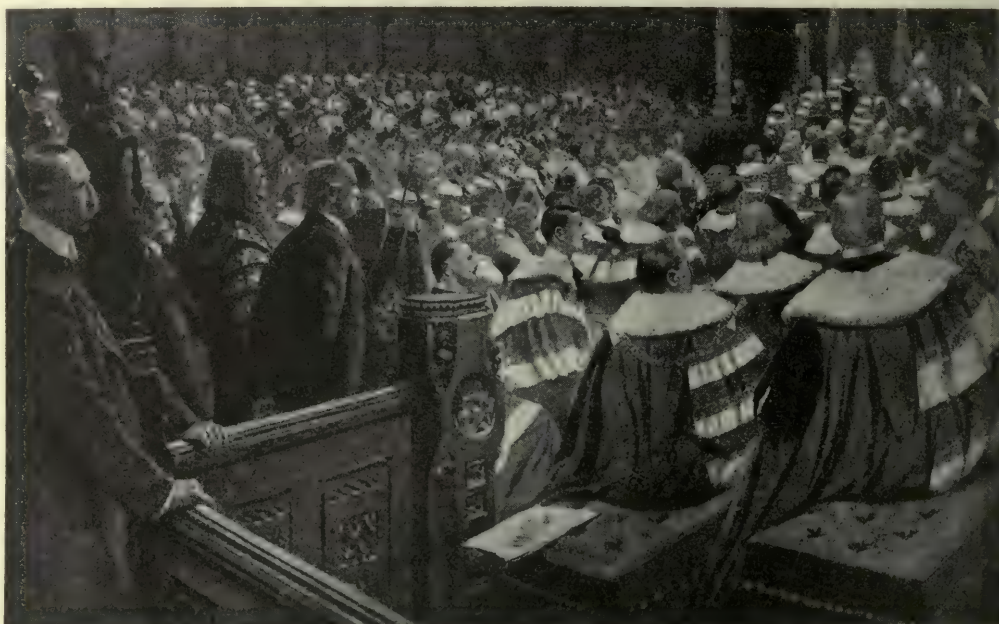
throne, and the earls and barons on its left. At the lower end of the chamber beyond the bar stood the Commons with the Speaker at their head, on the rare and solemn occasions on which they appeared in parliament.

The business was opened by the chancellor or some other councillor, who explained the cause of summons and the royal needs; and the various estates (the notion that there were only three is a misleading fiction) separated to deliberate on the answers they should make. The lower clergy withdrew to their own convocation, and in the 14th century ceased altogether to come to parliament. The knights of the shires and burgesses at first withdrew to separate rooms, but before the middle of the 14th century coalesced to deliberate, first in the refectory, and then in the chapter house of the Abbey across the way. The specially summoned prelates, earls, and barons asserted, probably in Edward II's reign, a claim to remain in the parliament chamber with the king's council, thus making it a *magnum concilium*, and the parliament chamber was thus also known as *camera magni concilii*.

As soon as the various estates had agreed upon their answers they returned into the parliament chamber to report them, the Commons by the mouth of their Speaker, and the clergy by their prolocutor; and the business of the representatives was at an end. They might stay on to hear the result of their petitions, but did not do so in any numbers until their individual petitions had been converted into effective or common petitions and made the basis of legislation. In any case the council continued sitting in parliament to deal with parliamentary petitions long after all the other elements had gone home. Most of the petitions presented were, however, at once referred to the appropriate courts; and it was only with the residue, which on account of their special difficulty or the novelty of the remedy required could not be so referred, that the council dealt in parliament.

Formation of Two Houses

Parliament was thus in the 14th century a single chamber for its solemn business, and broke up into a variety of meetings for what might be called committee-business. The two "Houses," so familiar to-day, were formed not so much by the division of parliament as by the amalgamation of various "estates." The prelates, earls, and barons clung to, and gradually



Parliament. Scene in the House of Lords on the occasion of the opening of Parliament by the King. On the left is the bar of the House, at which the Speaker and members of the Commons attend to hear the Speech from the Throne

swamped, the council; the lower clergy went off to convocation; and the knights of the shire and burgesses united to form the House of Commons. In time the separate work of these two groups, Lords and Commons, grew more important than their joint work in common session.

More unfortunate from the point of view of understanding the origin and history of parliament has been the removal of the law-courts from Westminster Hall to the Strand, and the consequent severance in the public mind of what was originally a single institution. Lawyers themselves are seldom aware that a judge of the High Court of Justice is called "My Lord" because historically he is a Lord of the high court of Parliament, or that when they talk of the chancery "side" they refer to a side of Westminster Hall which was part of that palace, where the judges also sat in more intimate session in the parliament chamber.

Change in Functions

The kernel of this change was the conversion of individual petitions, which are matters for judicial redress, into the common petition, which requires legislation and political action, and this development, which, more than anything else, created the House of Commons, also determined the functions of parliament. Parliamentary petitions were more and more referred to the council and

by the council to chancery, the star chamber, and others of its departments; and with the loss of this business parliaments grew more infrequent towards the close of the Middle Ages. Attendance was shirked both by Lords and Commons, and it was not until the growth of political intelligence followed on the Renaissance, localism expanded into nationalism, and the Tudors were compelled by their break with the Church to rely on parliament, that the ebbing tide of parliamentary activity was turned into its broader modern channels.

It was nursed by Henry VIII, grew fractious under Elizabeth, and rebelled against the Stuarts. That war against the Stuarts was the best testimony to the fostering care of the Tudors, for no parliament in the Middle Ages could ever have waged a war against the crown. But under Henry VIII a parliament, instead of being a matter of two or three weeks, sat for seven years, and during such periods acquired a solidarity, a self-knowledge, a tradition, a body of rules and customs, and a mastery of politics such as it had never possessed before. The Rolls of Parliament kept by the crown are superseded by the Journals kept by the Houses themselves; Henry VIII's habit of doing everything by parliament created the impression that nothing could be done without parliament; and it developed a

will of its own, denying the crown all sorts of control it had exerted before, and eventually establishing its claim to be the superior power. The Revolution of 1688 asserted the responsibility of the executive to parliament, but not till 1832 was the responsibility of parliament to the people fully recognized, and that recognition led to the supremacy of the House of Commons, which was completed by the Parliament Act of 1911.

Parliament is now legally the sovereign body in the constitution, though politically it obeys the will of the constituencies, and is sometimes threatened with the unconstitutional alternative of "direct action." It makes and unmakes laws, retains or turns out ministries, and directly or indirectly controls the whole of British policy. Unlike most modern legislatures, and particularly that of the United States, it is bound by no written constitution and hampered by no "separation of powers."

Scope of Powers

It can alter the most fundamental law with the same expedition and machinery as it passes or repeals a tramway Act; and no fixed terms of office, either for legislature or executive, prohibit the solution of disputes between them by a dissolution of the legislature or an ejection of the executive. On the other hand the elasticity of the system subjects parliament to manipulation; it

can be dissolved at a psychological moment, and can then prolong its own existence long after the popular mood has passed. The English parliament has been imitated in every quarter of the globe.

A. F. Pollard

PARLIAMENTARY PROCEDURE. In the British Parliament procedure is on similar lines in both Houses, but there are differences in detail. At the commencement of a new Parliament both Houses meet, and the Commons are summoned to the House of Lords, where they are informed by the lord chancellor, one of the royal commissioners, of the sovereign's intention to address both Houses. They are then directed to return forthwith and elect a speaker for the sovereign's approval, and, new peers having been introduced, the Lords adjourn. In the Commons, Mr. Speaker having been elected and conducted to the chair, the mace is placed upon the table. Next day he heads the Commons to the Lords, where the royal commissioners signify the sovereign's approval of his appointment, and he, speaking for himself and on behalf of the Commons, claims all their ancient and undoubted rights and privileges. A few days later Parliament is opened by the speech from the throne in the House of Lords.

Every sitting of the Commons, who meet at 2.45 p.m. on Monday, Tuesday, Wednesday, and Thursday, commences with prayers. The first important business, except on

Friday, is questions. The answering of these (notice of which has previously been given) by ministers ends at a definite time, and the House then proceeds to the business of the day, as set out in the Orders of the Day. These usually consist almost exclusively of Government bills in various stages, and debate continues until 7.45 p.m., when a half-hour interval is allowed for private bills, after which the interrupted debate is resumed until 11 p.m., when proceedings are again interrupted, and unopposed business is taken until 11.30 p.m. The House then stands adjourned unless for special reasons a longer sitting is made, e.g. debate on bills originating in committee of ways and means may be continued indefinitely. The House may, however, adjourn at any earlier time. Friday is reserved for private members' bills, the House meeting at noon, and rising at 5 p.m., or earlier.

In both Houses the front Government bench is to the right of the Speaker, and is occupied by ministers, whose supporters sit behind, while the Opposition benches are on the Speaker's left. The Speaker of the Commons is the impartial servant of the House, and does not intervene in debate unless to guide its course and maintain order. But he can speak and vote when out of the chair, i.e. when the House is in Committee, and has a casting vote, when the ayes and noes are equal in number.

The lord chancellor, who is ex-officio Speaker of the House of Lords, is free to vote, and frequently speaks. He has no casting vote, the not-contents carrying the division if the numbers are equal.

The initiation of financial legislation concerns the Commons only. The House of Lords has jurisdiction as a final court of appeal, whereas the Commons have no such judicial function. The royal assent to bills is also given in the Lords.

The session is usually closed by formal prorogation, which involves the quashing of virtually all unfinished proceedings, until a definite date. Dissolution, either by pleasure of the crown or by lapse of time, ends Parliament, and is followed by a general election.

A. H. Diplock

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Parliament. The House of Commons on the occasion of an important debate. On the left a minister, standing at the table, with the benches filled with his supporters behind him, is speaking; on the right members of the Opposition, with ex-ministers and privy councillors on the front bench

Parliament Act. — Statute, enacted Aug. 18, 1911, limiting the power of the House of Lords and making other constitutional changes. The rejection of the budget by the Lords in Nov., 1909, opened an acute controversy on the powers of the Upper House over money bills, and on the relations between the two Houses. The general election which followed the dissolution of Jan., 1910, reduced the Liberal government's majority from 334 to 124. The Commons passed resolutions introduced by the premier, H. H. Asquith, declaring that the House of Lords ought to have no power to reject or amend money bills, that other bills passed thrice by the Commons should become law irrespective of the vote of the Lords, and that the maximum duration of a parliament should be reduced from seven to five years. A bill embodying these resolutions was dropped owing to the death of Edward VII.

After an abortive conference, the general election of Dec., 1910, gave the Government a majority of 126. The Parliament Bill, introduced, Feb. 21, 1911, was passed by the Commons, and accepted by the Lords with certain amendments which the Government rejected. On July 21 Asquith intimated that the king would use his prerogative of creating enough peers to carry the bill through the Lords substantially in its original form. It was accordingly passed by the Lords by 131 to 114, and became law.

The Act as passed differed little from the resolutions of 1910. The Lords can at the most delay a money bill for one month; such bills are defined with some precision, and the Speaker is the authority who decides doubtful cases. An ordinary bill, if passed by the Commons in three successive sessions, will become law at the expiration of that time even if rejected by the Lords. Two years, however, must elapse between its second reading on its first introduction and its final acceptance by the Commons, and it must be sent to the Lords a month or more before the end of a session. The preamble of the Act referred to the necessity of reforming the House of Lords. *See Commons, House of; Lords, House of; Parliament.*

Parliamentary Agent. Person, usually a solicitor by profession, and acquainted with the details of parliamentary procedure, employed to assist the promoters of private bills by canvassing members of parliament, securing information, and generally facilitating the drafting and passing of bills.



Parliament Hill, Hampstead Heath. View from the summit of the hill, looking toward London

Parliament Hill and Fields. London open space. Situated near to the Hampstead border of St. Pancras, the hill is 319 ft. in height, and has a chain of ponds, over one of which the roadway is carried by a handsome viaduct. Since 1889 the hill and fields, covering 267 acres, have formed an integral part of Hampstead Heath, being acquired for the public at a cost of £301,000. The level ground near Gospel Oak and Highgate is maintained for cricket, lawn tennis, football, and other outdoor games.

The name Parliament Hill is supposed to connect the spot with an ancient folk-moot, or with the planting of cannon here by the Parliamentary forces for the defence of London during the Civil War. Its alternative name of Traitors' Hill is associated with the legend that here the confederates of Guy Fawkes assembled to witness the blowing up of the Houses of Parliament. The tumulus popularly known as Boadicea's Tomb was explored in 1894, when it yielded the rival theories that it was an ancient burial mound of the early bronze period, or that it was originally raised as a Roman boundary mark. *See Municipal Parks, Gardens, and Open Spaces of London, J. J. Sexby, 1898.*

Parma. Prov. of N. Italy, in Emilia. It is bounded N. by Cremona, S. by Massa e Carrara and Genoa, E. by Bergamo, and W. by Piacenza. Mountainous in the S., it slopes in a N.E. direction from the Ligurian Apennines to the river Po, which forms its N. boundary. The Parma, Baganza, and Taro, all tributaries of the Po, are the chief rivers watering the province. Cereals, wine, oil, cheese, and fruit are produced.

Cattle rearing and silk manufacture are important industries. There are many mineral springs, the most famous being that at Salsomaggiore. The capital is Parma. Area, 1,258 sq. m. Pop. 340,000.

Parma. City of Italy, capital of the prov. of Parma. It stands on both banks of the river Parma, 75 m. by rly. S.E. of Milan. An ancient and handsome city, surrounded in part by ramparts, its streets are straight and wide, while the old Aemilian Way traverses the city from E. to W. Its Lombard-Romanesque cathedral, built about 1059-1106, with later additions, has a lofty campanile and an octagonal dome, containing a fresco of the Assumption, one of Correggio's greatest works. The Romanesque baptistery, with a Gothic upper storey, 1196-1302, built of marble, is one of the finest in Italy.

There are about 60 other churches. The most notable are three Renaissance churches, Our Lady, 1521-39, S. John the Evangelist, 1510-1614, with frescoes in the dome by Correggio, and the Annunciation, 1566-1632. The ducal palace, or Palazzo della Pilotta, has art galleries with paintings by Correggio and other masters; a library containing over 300,000 volumes and 4,500 MSS.; and a museum of antiquities. The university dates from 1482. The convent of San Paolo contains the celebrated



Parma, Italy. Cathedral and 13th century campanile, from the south-east

Putti of Correggio. The chief industries of the city are connected with printing, silk, cereals, dairy produce, wine, and cattle.

Probably of Etruscan origin, Parma was colonized by Rome, 183 B.C., and the Roman bridge over the Parma is still extant. Its bishopric is first mentioned A.D. 378. In 1346 Parma was sold by the Correggio family to that of Visconti, and was associated under the Sforzas with the duchy of Milan until 1511. On June 29, 1734, the Austrians were defeated here by the French and Sardinians. Pop. 54,600.

Parma, DUCHY OF. Former independent state of Italy. Adherent to the Guelph faction during the Middle Ages, the city and its territories passed through many hands before they were absorbed in the papal possessions in 1512. In 1541 Pope Paul III made his son, Pier Luigi Farnese, duke of Parma and Piacenza, and his descendants held the title until 1731, when, with the death of Antonio, 8th and last Farnese duke, the duchy became an appanage of the Spanish crown. It was transferred to Austria in 1734, but reverted to Spain in 1748. In 1796 the French Revolutionary armies occupied it for six years, when Napoleon included it in the kingdom of Etruria, 1802.

The congress of Vienna, 1815, welded Parma, Piacenza, and Guastalla into a grand duchy of Parma, in which Napoleon's widow, Marie Louise, was given a life interest. On her death, 1847, the grand duchy, consisting of the five provs. of Borgo San Donnino, Valditaro, Parma, Lunigiana, and Piacenza, passed to Charles Louis, son of the last Spanish duke. Charles Louis, a mere tool of Austria and governed by Tom Ward, the English stable-lad whom he had made prime minister, fled at the revolution of 1848, and the following year abdicated in favour of his son, Charles III, who was assassinated in 1853. He was succeeded by his son Robert, who was deposed in 1860, when the grand duchy became part of the kingdom of Italy. At that time the area was about 2,400 sq. m., and the pop. was 500,000. *See* Farnese; Italy.

Parma, ALESSANDRO FARNESE, 3RD DUKE OF (1545-92). Italian soldier and statesman. Born in Rome, Aug. 27, 1545, Alessandro was the son of Ottavio Farnese (1520-86) and Margaret, natural daughter of the emperor Charles V, and spent his early years at Brussels and Madrid. Under Don John of Austria, he showed conspicuous courage at Lepanto, 1571, and was dispatched to aid his

struggle to maintain Spanish supremacy in the Netherlands, 1577. He succeeded Don John as governor-general in



3rd Duke of Parma,
Italian soldier

1578, and by astute diplomacy and skilful generalship succeeded in recovering the Walloon dependencies, his chief exploit being the 14 months' siege of Antwerp, 1584-5. But Farnese found his position imperilled by strong Dutch hostility and by discontent among his own troops. Nevertheless he succeeded in saving Paris from capture by Henry IV, 1590, and Rouen from the Huguenots, 1591, but died at Arras on Dec. 3, 1592. *See* Farnese.

Parmenides (c. 540-460 B.C.). Greek philosopher. A native of Elea, he was the chief representative of the Eleatic school of philosophy, founded by Xenophanes. Whereas Heraclitus had taught that everything was in a state of flux or movement, and that permanence was an illusion of the senses, Parmenides taught the opposite doctrine. All movement and change, he said, were illusions, and all things have existed, and will exist, the same for ever.

Parmenio (d. 330 B.C.). Macedonian soldier. He was second in command to Alexander the Great on his Persian campaign, leading the left wing in the three battles of the Granicus, Issus, and Gaugamela. Subsequently he became involved in a plot organized by his son against Alexander, and was put to death.

Parmigiano (1504-40). Italian painter. His name was Girolamo Francesco Maria Mazzola, and he was born Jan. 11, 1504, at Parma, whence he was commonly called Il Parmigiano. The son and nephew of painters, he was largely self-taught, but his early work was influenced by Correggio, and his later by Raphael. In Rome, in 1524, he was commissioned by the pope to paint a Circumcision for the Vatican, but was driven from the city by its invasion and sack by the Constable de Bourbon. He died in disgrace at Casal Maggiore, Aug. 24, 1540.

Parmoor, CHARLES ALFRED CRIPPS, 1ST BARON (b. 1852). British lawyer. Born Oct. 3, 1852, and educated at Winchester and New College, Oxford, he was called to the bar at the Middle Temple, 1877, taking silk in 1890. He sat in the House of Commons from 1895-1914, with intervals, for various

constituencies, and was knighted in 1908. In 1914 he was made a peer and a member of the



1st Baron Parmoor,
British lawyer
Russell

judicial committee of the privy council. Chiefly an ecclesiastical lawyer, Cripps was vicar-general of Canterbury. He was lord president of the council in the labour ministry, Jan.-Nov. 1924.

Parnahyba. Town and river of Brazil. The former, in the state of Piahy, stands on the river Parnahyba, 14 m. from its mouth. An important river port, it exports cattle, hides and other animal products, tobacco, cotton, and other agricultural produce. Pop. 12,000.

The river rises in the Serra das Mangabeiras, and flows N.N.E., forming the boundary of the states of Piahy and Maranhão. After a course of about 800 m., 400 m. of which are navigable by small steamers, it discharges into the Atlantic by a delta.

Parnassians. Group of French poets of the later 19th century. The name is derived from Le Parnasse Contemporain, a collection of poems by many authors published in 1866. Among the contributors were the older poets Leconte de Lisle, Théophile Gautier, Théodore de Banville, and Charles Baudelaire. Other collections under the same title appeared in 1869 and 1876. An offshoot of Romanticism, the school, which was mainly lyrical, eschewed all appeals but the aesthetic. Falling into preciosity and artificiality, they were succeeded by the Symbolists (*q.v.*).

Parnassus. Mountain of Greece. It is the highest peak, 8,069 ft. alt., of a range in Phocis, ancient Greece, lying N. of Delphi. Parnassus was sacred to Apollo and the Muses, and also to Dionysus. Immediately above Delphi is the celebrated Castalian spring.

Parnell, CHARLES STEWART (1846-91). Irish Nationalist. He was born at Avondale, co. Wicklow, June 27, 1846, of an English family long settled as landowners in Ireland, and was educated at Magdalene College, Cambridge. In 1875 he entered Parliament as a member of the small party of Irish Home Rulers.

Though a landlord, a Protestant, and a man reserved and aloof in manner, he exercised a commanding influence which transformed his party, small as it was, into an instrument which came

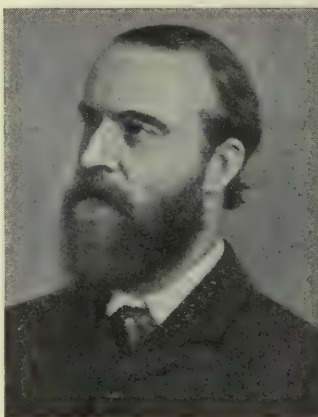
near to paralysing the House of Commons; a disciplined body which devoted itself to such an organized obstruction of public business as hitherto had never been known in England.

Parnell's aim was explicitly the establishment of an independent parliament in Dublin. For the agrarian question, the grievance consciously felt by the Irish peasant, he avowedly cared little, but he saw in it the means of combining the great majority of the Irish people into one compact force. To that end in 1878 he organized the Land League, poured vitriolic scorn on every English attempt to provide remedial agrarian legislation, and urged the Irish peasantry to adopt every conceivable method short of positive crime to render the law nugatory. The Phoenix Park murders in 1882 forced him to an open denunciation of such crimes, and a contemptuous repudiation of the charges that he had condoned them.

Popular opinion, however, still held Parnell guilty, morally at least, of Irish crimes and outrages, until a special judicial commission was appointed to investigate the whole question of "Parnellism and crime." The sensational event of this inquiry was the demonstration that an alleged letter of Parnell's, utterly damning if genuine, was a forgery which The Times newspaper had accepted with reckless credulity. Liberals and Irish Home Rulers were drawing into a close alliance, when Parnell was disastrously implicated in a divorce scandal. His intimate and trusted agent, Captain O'Shea, cited him as co-respondent in an action for divorce which he instituted against his wife, and, the action being undefended, secured a decree in Nov., 1890.

Parnell's retirement from the leadership, in which his parliamentary colleagues were at first disposed to retain him, was demanded by Gladstone; the Irish party was divided, the great majority insisting upon Parnell's withdrawal. Parnell fought fiercely for his position, repudiating the Liberal alliance. But before it could be said that the fight was decided, he died suddenly on Oct. 6, 1891, within four months of his marriage to Mrs. O'Shea, and within twelve months of the proceedings which had wrought his fall. See Gladstone; Home Rule; Ireland; Kilmainham Prison; consult also The Parnell Movement, with Sketch of Irish Parties, T. P. O'Connor, 1889; Life, R. B. O'Brien, 1898; C. S. Parnell, his Love Story and Political Life, 2 vols., Mrs. C. S. Parnell, 1914.

A. D. Innes



Chas J. Parnell

Parnell, THOMAS (1679-1718). English poet. Of English descent, he was born in Dublin and educated at Trinity College, Dublin. Made a minor canon of S. Patrick's Cathedral, 1704, he was archdeacon of Clogher, 1706-16, and became vicar of Finglas in 1716. Visiting England in 1706, he was on terms of friendship with Robert Harley, earl of Oxford, Swift, and



Thomas Parnell,
English poet

Pope. He contributed to The Spectator and The Guardian; was one of the members of the Scriblerus Club; and aided Pope in his translation of the Iliad, for which he wrote the introductory essay on Homer. Following the death of his wife (Anne Minchin) in 1711, Parnell gave way to intemperance, and, dying at Chester, was buried in Trinity Church there, Oct. 24, 1718. Praised by Goldsmith, who wrote his Life, and by Campbell, his work is marked by love of the classics, humorous fancy, grace, good taste, and moral feeling, and serves as a link between that of Pope and Goldsmith. Especially notable are his Hymn to Contentment, A Night-piece on Death, Epistle to Pope, A Fairy Tale, and The Hermit. Pope edited Parnell's Poems in 1721. See Collected Works, ed. G. A. Aitken, 1894.

Parody. Imitation, mainly as manifested in literature, of the general style or spirit of a writer or of the form of a specific piece of work, with intent to make fun. It differs from burlesque, which is a laughable perversion of a serious theme, in that it is a mocking of

the manner rather than the matter. In Sir Owen Seaman's words, "At its lowest, a mere verbal echo, at its highest it becomes a department of criticism."

Though the art is an old one, exemplified first in The Battle of the Frogs and Mice, and merging in the hands of Aristophanes through burlesque into pure comedy, modern parody may be said to begin with The Pipe of Tobacco of Isaac Hawkins Browne, 1736, little known now except by students. Popular parody started in England with The Anti-Jacobin of George Canning and J. H. Frere, 1797, and The Rejected Addresses by James and Horace Smith, 1812. Since then the art has had many admirable exponents, some of the chief of whom, among writers in English, are W. M. Thackeray, Sir Theodore Martin, and W. E. Aytoun, Bret Hartley, C. S. Calverley, Sir A. T. Quiller-Couch, Sir Owen Seaman, Stephen Leacock, and Max Beerbohm. See Parodies Collected and Annotated by Walter Hamilton, 1884-89; A Century of Parody and Imitation, Walter Jerrold and R. M. Leonard, 1913.

Parole. In international law, the pledge of honour of a prisoner of war to observe conditions imposed by his captor, if allowed his liberty. Under The Hague convention the government of a country cannot compel one of its subjects to break such parole, though if the government disapproves of the conditions of parole it is the duty of the combatant concerned to surrender again to the enemy. In a military sense, a parole is a watchword given by the commander of an army or garrison for officers to use.

In penal law, it is a pledge of good conduct given by a person convicted of crime as a condition of his or her release from prison. The parole system in penology is steadily on the increase in many countries, notably the U.S.A.

Paros. Island in the Aegean Sea, belonging to Greece. One of the Cyclades group, it is 5 m. W. of Naxos, and has a length of 13 m. and a breadth of 10 m. Pyramidal in shape, it rises in Hagios Elias, the ancient Marpessa, to about 2,500 ft. Near the chief town, Parikia, are the quarries of Parian marble, wrought from ancient times. Paros was colonised by Ionian Greeks who afterwards founded Parium and Thasos. It was captured by the Persians in 490 B.C. and later became merged in the Athenian confederacy. The Arundel marbles were brought to England from Paros in 1667. Its area is 96 sq. m. Pop. 8,000.

Parotid Gland. Largest of the salivary glands. Lying in the recess between the lower jaw and the ear, it is of irregular shape, consisting of several lobes. The duct, known as Stenson's duct, about 2 ins. long, pierces the muscles of the jaw and the mucous membrane of the mouth, and opens into the mouth opposite the second upper molar tooth. Its function is to secrete saliva, which assists the swallowing of food.

Parousia. Greek term for coming, appearance, or revelation. It is used in the Greek version of the N.T. for the Second Advent or Second Coming of Christ (2 Thess. 2). See Messianic Hope.

Parquet (Fr.). Name given to an inlaid or mosaic wooden flooring. Small blocks of wood are arranged in a geometric pattern. Oak is the wood most generally used, other woods of various colours being added for the more elaborate forms of parquetry.

Parr, CATHERINE (1512-48). Sixth wife of Henry VIII. Born at Kendal Castle, Westmorland,



Catherine Parr, Queen of England.
From the portrait by Holbein

daughter of Sir Thomas Parr, she married, at an early age, Edward Borough, perhaps Lord Borough, of Gainsborough, who died in 1529. Her next husband was Neville, Lord Latimer, who left her a widow for the second time, in 1543, and during the same year she became the wife of Henry VIII. The marriage took place at Hampton Court on July 12. Narrowly escaping a fatal entanglement in the religious controversies of the time, she survived the king, and married Sir Thomas Seymour, June, 1547, but died on Sept. 7, 1548. See *History of England*, J. Lingard, 1854; *Lives of the Queens of England*, A. Strickland, new ed. 1877.

Parr, GEORGE (1826-91). English cricketer. Born at Radcliffe-on-Trent, near Nottingham, he was



George Parr,
English cricketer

the son of a small landowner and farmer. In 1847 he joined the All England eleven captained by Clarke, which he himself captained, 1857-1870. He played also for Nottinghamshire, and many times for the players. Parr was regarded as the finest batsman of his day. He died at Radcliffe, June 23, 1891.

Parr, SAMUEL (1747-1825). British scholar. Born at Harrow, Jan. 26, 1747, the son of a surgeon, he was educated at Harrow School and Emmanuel College, Cambridge. He was successively a master in his old school, in a school of his own at Stanmore, and in other places, and eventually was ordained. In 1783 he became perpetual curate of Hatton in Warwickshire, where he lived for the rest of his life, and a prebendary of S. Paul's. Parr was an admirable Latin scholar, and in his views on education seems to have been in advance of his times. He enjoyed a great contemporary reputation as a talker and scholar. He died at Hatton, March 6, 1825.

Parr, THOMAS (c. 1483-1635). English centenarian, known as Old Parr. He is supposed to have lived in ten reigns, from that of Edward IV to that of Charles I. Tradition said that he was born at Winnington, near Alberbury, Shropshire, in 1483, and lived there most of his long life. In 1635 the earl of Arundel took him to London that he might be shown at court as a marvel, and in London he died on Nov. 15 of that year at the alleged age of 152, being buried in Westminster Abbey. John Taylor, the water poet, wrote a pamphlet, *The Olde, Olde, Very Olde Man*, 1635, which is the main source of information about Parr's life. The cottage in which he lived on the



Thomas Parr,
English centenarian

hills between Shrewsbury and Welshpool was sold to a namesake, but no descendant, in 1917.

Parrakeet. Name popularly given to many small long-tailed parrots. The ring-necked parakeet, well known in aviaries, has green plumage with a red collar. It is about 16 ins. long, and is found in India and Cochin China. Flying in flocks and feeding upon fruit and grain, it is a serious pest to gardeners and agriculturists. The grass parakeets of Australia have very beautiful plumage of green and blue, and are popular as pets. They spend most of their time on the ground, as do also the swamp parakeet and the ground parakeet, while both have barred tail feathers. See Parrot, colour plate.

Parral. Town of Chile. It is situated on the longitudinal rly. 26 m. S.S.W. of Linares, and is the chief town of a dist. of the same name, which forms part of the prov. of Linares. Pop. 9,000.

Parral or HIDALGO DEL PARRAL. City of Mexico, in the state of Chihuahua. An important mining centre, it stands on the river Parral, 120 m. S. of Chihuahua. Silver is extensively worked in the neighbourhood, and wine-making is a leading industry. Pop. 14,000.

Parramatta. Town and river of New South Wales, Australia, in Cumberland co. The town is on the river, 13 m. W.N.W. of Sydney, with which it is connected by road, rly., and river steamer. There are government steam tramways. The orchards of the locality are celebrated. The river is in reality an extension of Port Jackson, 10 m. in length. Pop. 12,500.

Parratt, SIR WALTER (1841-1924). British organist. Born at Huddersfield, Feb. 10, 1841, the son of a musician, he was educated privately. He became organist of a church near his home, and in 1872 was appointed to Magdalen College, Oxford. Having been



Sir Walter Parratt,
British organist
Elliot & Fry

there for ten years, he was transferred to S. George's Chapel, Windsor. In 1883 he was made professor of the organ at the Royal College of Music, and from 1908-18 was professor of music at Oxford. Knighted in 1892, he died Mar. 27, 1924.

Parret. River of England. It rises in Dorset, near Cheddington, and flows N.W. through Somerset, past Langport and Bridgwater, to the Bristol Channel, which it enters

by an estuary. Near Langport, to which it is navigable, it receives the Yeo and the Isle, and lower down the Tone joins it. Its length is 35 m.

Parricide. Murderer of a father. The term is not recognized in English law, no distinction being made between the killing of a father and any other form of murder. In Roman law the term included the murder of other near relatives, e.g. a grandfather, brother, etc., and was punishable by drowning in a sack. *See* Murder.

Parrot. Name applied in a broad sense to all birds of the order Psittaci, of which there are about 500 species known, from the warmer regions of both the Old and New Worlds. They are distinguished structurally by the form of the bill. Both mandibles are hooked, the lower biting within the larger, strongly curved upper one, which is hinged to the skull. The feet are of the scansorial type, two of the toes being turned backwards.

They have brightly, often gaudily coloured plumage, are monogamous, mostly sociable, and nest in tree holes. They are mainly fruit-eaters, though the kea has in recent years developed a carnivorous propensity. The order includes the cockatoos (Ptycolophidae), macaws (Conuridae), parakeets (Platyceiridae), lories (Trichoglossidae), the true parrots (Psittacidae), and others. In general use the name parrot is restricted to birds of the family Psittacidae, which are mainly African, and of these the most familiar in Britain is the grey parrot (*Psittacus erythacus*), of which large numbers are imported.

The food should be mainly seeds, such as maize, hemp, canary-seed, with nuts of all kinds except monkey-nuts; apple, pear, plum, banana; raw carrot, dry biscuit, and a stick of soft wood to cut to pieces. There should always be a good supply of coarse, gritty sand; and two or three times a day the bird should be allowed a drink of water, but a constant supply will be abused. Animal food, even a bone, should never be given. *See* Bird, colour plate; Kaka; Kea; Lory; Macaw; Parakeet; Parrot, colour plate.

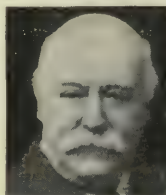
Parrot Fish (*Scarus*). Name applied to several species of fish belonging to the wrasse family, found in tropic seas, one species occurring in the Mediterranean. The teeth are modified to form sharp biting beaks; and this, together with their brilliant colouring, has given rise to the popular name. They feed upon corals, molluscs, and sea-weeds, which they chew in a curious fashion, giving rise to the ancient

notion that they were ruminating animals. The Mediterranean species was greatly esteemed for the table by the Greeks and Romans.

Parr's Bank. British banking company, now part of the London, County, Westminster & Parr's Bank. It was founded as a private bank about 1780, and became a public company in 1865. Its headquarters were at Warrington, and it had branches mainly in Lancashire and Cheshire. Between 1865 and 1914 Parr's took over a number of other banks, the most important being Stuckey's (q.v.). When it was amalgamated with the London, County & Westminster Bank in 1918, it had about 300 branches and a paid-up capital of £2,400,000. The head office was at 4, Bartholomew's Lane, London, E.C.

Parry. General name of a group of islands in the Arctic Ocean. They are situated N. of Lancaster Sound, Melville Sound, and Barrow Strait, and W. of Baffin Bay. They include Devon, Cornwallis, Bathurst, Melville, and Prince Patrick islands. Named after Sir W.E. Parry, who visited them in his 1819 expedition, they were further explored by the expeditions in search of Sir John Franklin and others.

Parry, Sir CHARLES HUBERT HASTINGS (1848-1918). British organist and composer. Born at



Sir Hubert Parry,
British organist
Russell

Bournemouth, Feb. 27, 1848, he was educated at Eton and Exeter College, Oxford, and studied music at Stuttgart and in London. In 1883 he was appointed professor of composition and of musical history at the Royal College of Music, and he became its director in 1895. From 1899 to 1908 he was professor of music at Oxford. He was knighted in 1898 and made a baronet in 1902. He died Oct. 7, 1918. Parry's compositions include symphonies, overtures, and chamber music, several fine oratorios, of which *Judith* and *Job* are the best known, and a beautiful setting of Milton's *Blest Pair of Sirens*. He wrote *The Art of Music*, 1893; *Style in Musical Art*, 1900; *The Music of the 17th Century*, 1902; and *J. S. Bach*, 1910.

Parry, Sir WILLIAM EDWARD (1790-1855). British explorer. Born at Bath, Dec. 19, 1790, he entered the navy in 1806, was employed in protecting whalers in Spitsbergen, 1811-13, and five years later accompanied Ross's

Arctic expedition. In 1819 he was given command of the *Hecla*, and set sail to find the North-West Passage. Passing through Baffin Bay he made 114° W. He returned to England in 1820. From 1821-25 he made two other Arctic voyages of discovery, and in 1827 he sailed to Spitsbergen, and there made



Sir W. E. Parry,
British explorer

an attempt to reach the N. Pole by boat and, sledge. Surmounting great difficulties, and hampered by the southward drift of the ice, Parry reached 82° 45' N., a record which was unsurpassed for nearly fifty years. Returning in 1829, he was knighted, and later became deputy governor of Greenwich Hospital. He died at Ems, July 8, 1855. His best known works are: *Voyages to the North-West Passage*, 1821; and *Narrative of an Attempt to Reach the North Pole in Boats*, 1828. *See* *Memoirs of Rear-Adm. Sir W. E. Parry*, E. Parry, 1857.

Parsees OR **PARSIS** (inhabitants of Pars, or Persia). Religious community of India and parts of Persia. In India, where they form a leading section of the native trading classes, they numbered in 1921 rather more than 100,000, living mostly in Bombay and other places on the W. coast. Their religion, known as Parseeism, is the modern form of Zoroastrianism. On the Arab conquest of Persia, in 651, the inhabitants were forcibly converted to Mahomedanism, with the exception of those who fled the country, and a few others whose descendants, numbering about 9,000, maintain their religion in Persia to the present day. Parsees, known, from their regard for fire as an emblem of purity, as Fire-worshippers, are also called Ghebers or Guebers, an Arabic term for unbelievers.

The Parsees of India are the most enterprising and educated native community, and many have devoted their wealth and ability to philanthropic and public ends. They are notable for their integrity, benevolence, intelligence, loyalty, and clean living. They expose their dead on iron gratings in towers of silence, where the bones, denuded of flesh by vultures, drop into a pit, and are afterwards removed to a resting-place underground. *See* India; Zend-Avesta; Zoroastrianism; consult also *History of the P., D. F. Karaka*, 1884.



1. Blue-headed parrot, *Phaps melanurus*, Brazil. 2. Roseate parakeet or parrotlet, *Psaltriparus castaneus*, S.E. Australia. 3. Red-shouldered parakeet, *Psaltriparus castaneus*, Australia. 4. Scimitar-tailed parakeet, *Psaltriparus castaneus*, Australia. 5. Australian grey parrot, *Myiopsitta alba*, Australia. 6. Parakeet, *Psaltriparus castaneus*, Australia. 7. Vulturine parrot, *Cephalophaps uropygialis*, Australia. 8. Blue-headed parakeet, *Psaltriparus castaneus*, Australia. 9. Blue-headed parakeet, *Psaltriparus castaneus*, Australia. 10. Yellow parakeet, *Psaltriparus castaneus*, Australia. 11. Blue-headed parakeet, *Psaltriparus castaneus*, Australia. 12. Blue-headed parakeet, *Psaltriparus castaneus*, Australia. 13. Blue-headed parakeet, *Psaltriparus castaneus*, Australia.

10. Yellow parakeet, *Psaltriparus castaneus*, Australia. 11. Blue-headed parakeet, *Psaltriparus castaneus*, Australia. 12. Blue-headed parakeet, *Psaltriparus castaneus*, Australia. 13. Blue-headed parakeet, *Psaltriparus castaneus*, Australia.

PARROT: MULTI-COLOURED REPRESENTATIVES FROM THREE CONTINENTS

Specialty drawn for the month's University Engraving by J. F. Gough

Parseval. Name applied to a type of non-rigid airship designed by the German engineer of that name. During the Great War the construction of the type was dropped by the Germans in favour of rigid airships. The Germans also used a sausage-shaped balloon, the Parseval-Sieglfeld, for observation purposes. See Airship.

Parsifal. Opera by Wagner. Produced at Baireuth in 1882, it is based on Wolfram von Eschenbach's Parzival, a version of the legend of Sir Perceval, in which the story of the Grail is combined with that of the simple, ignorant hero, who attains wisdom through charity and purity of heart. The opera created a storm of controversy, principally on account of the supposed resemblance of the argument to the life of Christ. See Grail, The Holy; Opera; Perceval.

Parsimony (Lat. *parsimonia*, sparingness). In metaphysics, the law of parsimony deprecates the unnecessary assumption of the existence of anything in order to explain what is admitted to be fact, when such explanation is equally possible without such assumption. In physical and general science the same law asserts that the number of causative factors adduced in the explanation of a phenomenon shall be the smallest possible. This is the doctrine of Ockham (*q.v.*), known as Ockham's razor, that entities should not be multiplied unnecessarily.

Parsley (*Carum petroselinum*). Biennial herb of the natural order Umbelliferae. It was introduced into Great Britain from Sardinia in 1548. It succeeds best in a light loam, generally failing to withstand the winter in a heavy or clayey soil. To ensure a succession of crops three sowings of seeds should be made—one in March, another in June, and the third in August in rows 12 ins. apart. When the young plants are 2 ins. in height they may be separated

to a distance of about 6 ins. every way, and left until the leaves are ready to cut. At the end of the second year the crop will be coarse. The old plants should then be eradicated, and a fresh sowing made in a different situation.

Parsley Fern (*Cryptogramma crispa*). Fern of the natural order Polypodiaceae. Native of Europe, Asia, and Alaska, it forms tufts among the stones in mountain



Parsley Fern. Tuft of fronds growing in a heap of stones

districts, the fronds springing from a scaly rootstock. The fronds are rather thin in texture, oval-wedge-shaped, bluish green, and much divided like a parsley leaf.

Parsnip (*Pastinaca sativa*). Native British biennial plant of the natural order Umbelliferae. In its wild state it has no nutritive value, but under cultivation it has developed into the well-known root vegetable, attaining often a length of from two to three feet. Parsnips flourish in deep, rich loam which has not been freshly manured; the presence of raw stimulant tends to deform and split the roots. The seed should be sown in the open ground in March, in rows a foot apart and an inch deep. The young plants should be thinned to 9 ins. apart every way, and left until Sept. or Oct. The roots are ready to pull when the foliage dies down, but may be left in the ground until touched by early frost.

Parson (Med. Lat. *persona*, a representative). Legal title of one who holds a parochial cure of souls. Holy orders, presentation, institution, and induction are necessary to make a man a parson, and as such the freeholder for life of the parsonage-house, glebe, tithes, and other dues. The term parson properly belongs only to a rector. A vicar had the same parochial responsibility, but did not hold the church property, being merely the deputy of an absent rector. The term is used in a popular sense of any minister of religion. See Clergy; Induction.

Parsons. City of Kansas, U.S.A., in Labette co. It is 135 m. S.S.W. of Kansas City, and is served by the Missouri, Kansas, and Texas, and the St. Louis and San Francisco Rlys. Its industrial establishments include large rly. constructional shops, grain elevators, flour mills, and clothing factories. Parsons was incorporated in 1871. Pop. 16,000.

Parsons, Sir CHARLES ALGERNON (b. 1854). British engineer. Born June 13, 1854, a younger son of the astronomer, the 3rd earl of Rosse, he was educated at home and St. John's College, Cambridge, and, having been trained as an engineer, founded at Newcastle the firm of C. A. Parsons & Co.



Sir C. A. Parsons, British engineer
Russell

His great invention was the Parsons marine steam turbine, and, having brought his own business into a strong position, he became connected with electric lighting and other companies. In 1911 Parsons was knighted, and during the Great War served on the board of inventions. Made F.R.S. in 1898, he was president of the British Association, 1919.

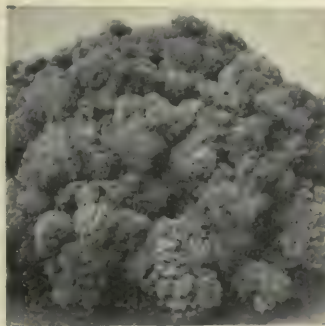
Parsons OR PERSONS, ROBERT (1546–1610). English Jesuit. Born at Nether Stowey, Somerset, June 24, 1546, and educated at Oxford, he resigned his fellowship of Balliol in 1574 to escape expulsion, on account of his tendencies to



Parsnip. Edible roots of the vegetable

By courtesy of Sutton & Sons

Roman Catholicism, and proceeded to the Continent. He went to Rome and became a member of the Society of Jesus, July 4, 1575. Henceforth all his energies were bent on overthrowing the reformed Church in England, which he secretly visited in 1580. In 1587 he was made rector of the English College at Rome, and in 1591 wrote his *Responsio ad Elizabethae edictum*. He died in Rome, April 18, 1610. See Athenae Oxonienses, A. à Wood, new ed. 1813–20; *Annals of the Reformation*, J. Strype, 1824.



Parsley. Plant of Dwarf Perfection parsley

By courtesy of Sutton & Sons

Parsonstown OR BIRR. Urban dist. and market town of King's co., Ireland. It stands on the Little Brosna river, 89 m. from Dublin, with a station on the G.S. & W. Rly. S. Brendane's is the chief church. There are some manufactures, and a trade in agricultural produce. Known at first as Birr, its other name was given to it after it became the property of the family of Parsons, earls of Rosse, about 1610. The earl's seat is Birr Castle, and the town contains a statue of the 3rd earl, the astronomer. In Cumberland Square there is also a statue of the duke of Cumberland. Market day, Sat. Pop. 5,400.

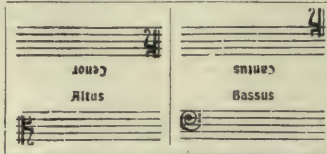
Part. Musical term with several applications: (1) That portion of a concerted composition which is allotted to any component voice or instrument. Thus, there are four parts in the ordinary hymn-tune, for soprano, alto, tenor, and bass respectively. By analogy, contrapuntal music, such as fugues, etc., which are derived from vocal forms, is also said to be in parts, even though it is performed upon a single instrument, as the piano-forte or the organ. (2) The equivalent in oratorios, cantatas, etc., of "act" in opera. (3) A certain portion of a composition which is in binary or ternary form.

Partabgarh. Native state and town of Rajputana, India. The hilly N.W. of the state is peopled chiefly by Bhils, and the rest is open country with no large rivers. There is a trade in grain and locally made cloth. The rainfall is 31 ins. annually. The town is 120 m. N.W. of Indore and is noted for its enamelled work. Area, 886 sq. m. Pop., state, 62,700; town, 8,300.

Partabgarh. Dist. of the United Provinces, India, in Fyzabad division. The dist. is situated N. of Allahabad dist., with the Ganges in the S.W. The annual rainfall is 38 ins. The chief crops are rice, wheat, barley, and millet. The capital is Bela, sometimes known as Partabgarh. Area, 1,443 sq. m. Pop., dist., 900,000; town, 6,300.

Part-book. Book containing the different parts for the performers of a vocal or instrumental piece of music. In medieval times, composers seldom issued their works in score (*q.v.*), but used instead separate part-books, generally one for each voice. Sometimes, however, the parts were written out separately, but side by side, or one above another on the double page of one book, so that all the singers could use it simultaneously. A variation of

this was to arrange the four parts in the following manner:



In this way the performers on opposite sides of a table were enabled to read from the book.

Parthenogenesis (Gr. *parthenos*, virgin; *genesis*, generation). Biological term to express a mode of reproduction in which impregnation of the female germ-cell by the male element is absent. Some species, e.g. many gall-flies and saw-flies, consist entirely of females, and these virgin females produce offspring. There are other examples of the same process occurring among insects, rotifers, crustaceans, and some plants, in which the ova, though never fertilised, develop into individuals. Plant lice develop in the same way. From the unfertilised eggs of the queen bee only males result.

There is evidence that parthenogenesis is, to a certain extent, influenced by external environment, because in the case of the *Aphides*, or plant lice, the parthenogenetic process occurs in the warmer months of the year, and the result is an extraordinarily rapid multiplication of the lice. The last eggs laid in the autumn by this species, however, are fertilised. They remain undeveloped during the winter, and upon the advent of spring develop into females. In the absence of the males they develop without fertilisation, but when the temperature falls in autumn the last generation of eggs deposited are both male and female. See Biology; Life; Sex.

Parthenon, THE (Gr., Virgin's chamber). Temple of Athena, on the Acropolis, Athens. It was built

between 447 and 438 B.C., and was opened on the occasion of the Panathenaic Festival in the latter year; the cult of Athena having been previously practised in an older temple on the Acropolis, near the site of the Parthenon itself. The architects were Ictinus and Callicrates, and the structure, which is of the Doric order, consisted entirely of Pentelic marble. In plan the Parthenon is a parallelogram, the cella or nave, 194 ft. long, being divided into two main parts, viz. the Hekatompedos to the east, where Pheidias' great statue was placed, and the Opisthodomos to the west, where the offerings were made. There were eight outside columns at each end, and 17 on each side. The portico at either end was double, i.e. there was an inner line of six columns behind the outer line of eight. Strictly speaking, the Opisthodomos, where the virgin priestess received the offerings, was the Parthenon proper, a title later extended to the whole building.

Architecturally, the Parthenon is the crowning instance of the subtlety involved in the apparent simplicity of Greek construction. F. C. Penrose discovered that the horizontal lines are imperceptibly curved, and that the perpendicular lines incline very slightly towards the centre of the temple. The apparently flat floor is slightly higher towards the centre than at the edges; the columns not only taper towards the summit, but are of greater girth at the centre than they are at the base. Little variations of height and thickness occur in the corner columns, according to the intensity of the light that fell upon them, and the fluting is studied with an eye to its relationship with the light.

The chief glory of the Parthenon was the decorative sculpture by Pheidias (*q.v.*) and his school. Of the metopes (*q.v.*) attributed to



Parthenon, Athens. Ruins of the ancient temple of Athena, from the north-west

them, there were originally 92, 41 of which remain in their place, the bulk of the remainder being in the British Museum. The subjects, including combats between the Centaurs and the Lapithae, and Greeks and Amazons, are treated in high relief. The group of statuary on the eastern pediment represents the birth of Athena; that on the western, the contest between Athena and Poseidon for the possession of Attica. Finally, the continuous frieze round the cella, representing the Panathenaic Festival, ranks as the most wonderful pictorial representation in low relief in the world, as regards both scale and treatment. In contrast to the gleaming white marble columns and roof of the Parthenon, the sculptures and mouldings were enriched with colour. With the exception of the inside sculptures, the Parthenon remained nearly intact till 1687, when the explosion by a Venetian bomb of a powder magazine stored here by the Turks dislodged much of its splendid masonry. See Acropolis, also col. plate; Art; Athens; Centaur; Elgin Marbles; Nashville.

Bibliography. The Antiquities of Athens, J. Stuart and N. Revett, 1762-1815; Der Parthenon, A. Michaelis, 1871; Ancient Athens, E. A. Gardner, 1902; The Sculpture of the Parthenon, A. S. Murray, 1903; Athens and its Monuments, C. H. Weller, 1913.

Parthenopaeian Republic. Republican state formed at Naples, 1799-1800. The name is taken from Parthenopē, the old name of Naples. Established under French auspices, Jan. 23, 1799, after the flight of Ferdinand IV the republic was in the hands of patriotic and cultured men who endeavoured to establish a model state run on elevated, but quite impracticable lines. Championnet, the French general, did little to help.

When Cardinal Ruffo, commissioned by Ferdinand to re-establish the Bourbon rule, marched up through Calabria with his army of brigands and liberated convicts, the French withdrew, and after a desperate but hopeless encounter, the republicans were defeated at Ponte della Maddalena, Ruffo and his cutthroats entering and sacking Naples, June 13, 1800. An armistice was signed between Ruffo and the republican authorities, which Nelson ignored on his arrival. He arrested and hanged Caracciolo (*q.v.*), and other leaders of the republic, which thus ended in treachery and bloodshed. See Naples.

Parthia. Country of ancient Asia. It lay S.E. of the Caspian Sea, and adjoined Media on its W. and N.W. border. It formed

a part of the old Persian or Achaemenid empire, and when that empire was overthrown by Alexander the Great, and split up among his successors, was included in the dominion of the Seleucid kings of Syria. About 250 B.C., however, it became an independent kingdom under Arsaces I, the founder of the Arsacid dynasty. During the succeeding centuries it increased enormously in size and importance, and under Mithradates I (170-138 B.C.) became the Parthian empire, stretching at its greatest extent from the Euphrates to beyond the Indus. Even the all-conquering Romans could make no real headway against this great Eastern power.

Of nomadic Scythian origin, though gradually absorbed by the Persians, the Parthians relied on their formidable mounted bowmen. They promoted Greek civilization, and made Ctesiphon their capital. They overthrew Crassus (*q.v.*) at Carrhae (Haran), in 53 B.C., conquered Syria, 40-38, and were again intermittently at war with Rome with varying success from A.D. 115 to 218. In A.D. 226 Parthia was conquered by the Persian, Ardashir I, and absorbed in the rehabilitated Persian empire.

Partick. Dist. of Glasgow, formerly a separate burgh. It is situated where the Clyde is joined by its tributary, the Kelvin, which separates it from Glasgow proper. It is in the main an industrial area, with engineering works, ship-building yards, etc. Victoria Park is a memorial of Queen Victoria's jubilee. In 1912, having a pop. of about 66,000, it was absorbed into Glasgow. Before the industrial developments of the 19th century, Partick was a village at which the bishop of Glasgow had a palace. See Glasgow.

Partinico. Town of Sicily, in the prov. of Palermo. It stands on the coastal rly., about midway between Castellamare and Palermo, 15 m. direct W.S.W. of the latter city. It manufactures silken and woollen goods, and trades in wine and oil. Pop. 22,000.

Partition. In law, the actual division, by metes and bounds, of real property which belongs to co-owners. At common law a co-owner could claim a partition of the common property; but by the Partition Acts, 1868 and 1876, the court may now, on any suit for partition, order that instead of the property being divided it shall be sold, and the proceeds divided.

Partnership. Defined by the Partnership Act, 1890, as "the relation which subsists between

two or more persons carrying on a business in common with a view to profit." Thus there are excluded mere joint ownership of property; and the mere association of persons with a common object but not with a view to profit, *e.g.* a social club, or a philanthropic society. The great characteristic of partnership is that every partner is agent for the firm as a whole.

The law of Scotland differs from the law of England and Ireland. In Scotland a firm is a separate legal person, just as a limited liability company or corporation is. In England and Ireland "there is no such thing, in law, as a firm." That is, a partnership firm is merely a convenient way of describing the individuals who compose the firm; and the rights of a creditor are against these individuals, so that he can sue them individually and issue execution against their private estate. In England and Ireland, also, all partnership debts are joint. In Scotland partnership debts are joint and several.

As between partners the rights and duties and powers are governed by the agreement of partnership, called the *articles of partnership*; but these may be varied from time to time by practice, or verbally. A partnership comes to an end by effluxion of time, agreement to dissolve, decree of dissolution, or death of a partner.

Partridge. Game bird of which two species occur in Great Britain. The common or grey partridge (*Perdix cinerea*) is found throughout Great Britain and Europe, but the French or red-legged species (*Caccabis rufa*) is a native of S. Europe, and was introduced into Great Britain about the close of the 18th century. The French partridge is distinguished by its more handsome plumage, and bright red legs and beak, and has now become common in England, preferring sandy soil and uncultivated land, as distinct from the grey partridge, which thrives best on rich soil and amid cultivated fields. The French bird is more fleet of foot and difficult to approach than the grey partridge.

Partridges are found in coveys of from five to twenty birds, except in the nesting season, feeding upon insects, leaves, grain and other seeds early in the morning and in the afternoon. During the heat of the day they bask in the sun and take frequent dust baths. At night the covey roosts in a circle in the middle of an open field, each bird facing outwards as a precaution against enemies. The nest is made of grass and leaves placed

in a hollow in the earth under a hedge or among the standing corn, and may contain as many as 18 eggs.

In Great Britain and Ireland the partridge-shooting season as fixed by the Game Act is from Sept. 1 to Feb. 1 inclusive. The birds are either driven towards the guns or shot over dogs. In large, open fields the former is the more usual plan, beaters raising the birds and then driving them towards the guns arranged in line in the form of an arc of a circle. In small fields and broken country walking up the birds over dogs is the better plan, pointers and retrievers being the best dogs. See Eggs, col. plate; Game; Game Laws; Shooting.

Partridge, SIR BERNARD (b. 1861). British cartoonist. Born in London, Oct. 11, 1861, son of Prof.



Richard Partridge, F.R.S., he was engaged in stained-glass designing, 1880-84, painted in oil, water colour and pastel, but was best known as a black-and-white illustrator and cartoonist.

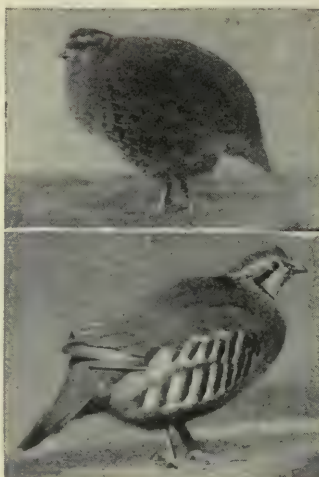
He began to contribute to Punch (g.v.) in 1891, and became chief cartoonist. He was knighted in 1925. See John Bull.

Partridge Berry (*Mitchella repens*). Small trailing evergreen herb of the natural order Rubiaceae. It is a native of N. America. It has small roundish-oval, shining, opposite leaves, and small fragrant white flowers in pairs. It bears scarlet, edible berries.

Partridge Wood (*Andira inermis*) OR CABBAGE TREE. Evergreen tree of the natural order Leguminosae. It is a native of Jamaica. The alternate leaves are broken into about a dozen oval-lance-shaped leaflets in two rows. It has clustered purple flowers and roundish fleshy pods. The name is also applied to the wood of *Heisteria coccinea*, a W. Indian tree of the natural order Olacaceae.

Parts of Speech. In grammar, the name given to the different classes of words, the members of which play a special and well-defined part in the sentence. They are generally reckoned as eight in number: adjective, adverb, conjunction, interjection, noun, preposition, pronoun, verb. See Adjective; Noun; Grammar.

Part-song. Musical term for an unaccompanied work for three or more voices, also applied loosely



Partridge. Red-legged or French species; top, common British partridge

W. S. Burridge, F.R.S.

to any short choral work. It has always been a popular form among British composers, of whom prominent representatives are Hatton, Smart, Sullivan, Barnby, Macfarren, and Sterndale Bennett.



Partridge Berry. Stem of foliage and flowers, showing trailing roots; inset, single flower

Party. In politics, a body of persons holding the same political opinions and usually opposed by a party holding other opinions. Government by party is the normal condition of things in all countries where popular representation is established. The word is also used for those who hold similar views on religious or other matters, e.g. a party in the Church of England, and in a more general sense for a body of persons banded together in some common purpose, as a pleasure party. In law, party is a synonym for a litigant. See Conservative; Democrat; Left; Liberal; Republican; Unionist, etc.

Party-Wall. Wall separating one house from another. The term is, however, often applied to a wall or fence separating the land

of one owner from that of another. *Prima facie*, a party-wall belongs to the owners of both houses equally, as tenants in common, and both are liable to repair it. If, however, a complete house exists, and another is built alongside it so that the wall of the first house is used as the wall of the second, the wall continues to belong to the first house, and the owner thereof is bound to keep it in repair.

Pas (Fr., step). Word adopted in English for certain dances particularised by other French words indicating the number of performers engaged. Thus a *pas seul* is an exhibition of the art of dancing given by a single virtuoso; a *pas de deux*, *de trois*, or *de quatre*, a similar spectacular display by two, three, or four dancers.

Precedence is another sense in which there is good authority for the use of the word *pas* in English, to have the *pas* of anyone signifying the right of going before him on ceremonial occasions. *Faux pas*, a false step or trip, is an accepted term for a social solecism. See Ballet; Dancing; Russian Ballet.

Pasadena. City of California, U.S.A., in Los Angeles co. It is 9 m. N.E. of Los Angeles, and is served by the Atchison, Topeka, and Santa Fé and other rlys. It is a residential city and winter resort. Notable places in the vicinity are the Busch Sunken Gardens and Mount Wilson, on which is the Carnegie Solar Observatory. Pasadena was settled in 1874, and incorporated in 1886. Pop. 45,400.

Pasargadae OR PASARGADA. City of ancient Persia. Situated in the plain now called Murghab, it was established as the capital of Persia by Cyrus the Great until it gave place to Persepolis. The tomb of Cyrus has been identified.

Pascal, BLAISE (1623-62). French philosopher, theologian, and mathematician. Born at Clermont-Ferrand, Auvergne, June 19, 1623, and educated in Paris and Rouen by his father, who was president of the Court of Aids, he showed early



a remarkable mathematical genius, exemplified in his Geometry of Conics, 1639, calculating machine, and contributions to the study of atmospheric pressure, the infinitesimal calculus, equilibrium of fluids, and probability.

Apart from his mathematical works and studies in natural science, Pascal is famous as a

theologian and philosopher, and as one of the great French prose writers. His philosophy was influenced by the writings of Epictetus, Montaigne, and Descartes; he came under the religious influence of the Jansenists, and about 1654 retired to Port-Royal, which his sister, Jacqueline, had entered, and where he adopted the ascetic mode of life. In 1656-57 he became the champion of Port-Royal against the Jesuits, writing pseudonymously the 18 *Lettres—Écrites par Louis de Montalte à un Provincial de ses Amis et aux Révérends Pères Jésuites, sur le Sujet de la Morale et de la Politique de ces Pères*—familiarily known as *The Provincial Letters*. Masterly as examples of subtle and polite controversial irony and brilliant wit, they defend the theological tenets of Arnauld, attack Probabilism, and attempt to show that Port-Royal was not heretical, but that Jansenism was in accord with the Universal Church. The *Letters* were condemned by Pope Alexander VII in 1657, and publicly burned in 1660, but their writer remained a devoted member of the Roman Catholic Church.

Pascal's *Pensées sur la Religion et sur quelques autres sujets*, issued posthumously in 1670, though only fragments of a projected *Apology or Defence of Christianity*, have exercised perhaps a wider influence in theology than the *Letters*. While both served to bring the discussion of vital things into the public arena, the *Pensées* appeal more to the imagination, a fact exemplified in the notable conception of man as standing between two immensities: above him the universe great beyond the understanding of mortal mind, below him another universe in which the slightest insect has all the complexity of man himself. Pascal died in Paris, Aug. 19, 1662, and was buried in the Church of S. Étienne du Mont. See Arnauld; Jansenism; Port-Royal.

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Paschal. Name of two popes and one anti-pope. Paschal I was pope from 817-24. Paschal II, a Benedictine monk, reigned from 1099-1118. Overpowered and imprisoned by the emperor Henry V,

he yielded the right of investiture, which his predecessors had refused to allow. Paschal III was anti-pope in the reign of Alexander III from 1164-68. His canonisation of Charlemagne was never ratified.

Pasco or **Cerro de Pasco.** Mountain group of Peru, in the dept. of Junin. The mountain systems of Peru form a knot in the neighbourhood of the town of Cerro de Pasco (q.v.). See Andes.

Pas-de-Calais (Fr. name of the Straits of Dover). Department of France. Situated in the N. of the country, it has a coast-line on the English Channel, and is mainly a fertile plain with some low ranges of hills. The chief rivers are the Lys and the Scarpe. Wheat, oats, potatoes, and other crops are grown; horses, cattle, and poultry are reared. Coal is mined, and there is a considerable fishing industry. For conveying the coal the department has a very complete network of canals. Arras is the capital, and in the department are Calais, Boulogne, Lens, St. Omer, Wimereux, and Agincourt. A region of drained fenland called the *Wattergands* is famous for its market gardens. During the Great War part of this department was in possession of the Germans. Its area is 2,606 sq. m. Pop. 1,070,000. See Arras; Artois, Battle of; Loos, Battle of.

Pasha. Turkish title given to governors of provinces, high military and naval officers, and others. The rank of pashas was formerly indicated by horse-tails carried as standards, three denoting the highest grade, two the middle, and one the lowest. *Bashaw* is an early English form of the word.

Pashitch or **PACHITCH, NICHOLAS PETER** (b. 1843). Serbian statesman. The son of Peter Pashitch,



N. P. Pashitch, Serbian statesman

he was born at Zaitchar, qualified as an engineer at the university of Zürich, and became a member of the *Skupshchina* in 1876. In 1883 he headed the "Revolution of Zaitchar" against King Milan, was made prisoner, and condemned to death, but succeeded in escaping, and in 1888 he was prime minister of Serbia. On the accession of King Peter in 1903 he was again prime minister, and continued to hold that position till 1918. He was head of the Serbian delegation at the Peace Conference at Paris, 1919, and premier of Yugo-Slavia, 1921.

Pasig. City of Luzón, Philippine Islands. It is situated near the centre of the island, 8 m. E. of Manila. The capital of Rizal prov., it suffered much by fire in the insurrection of 1897. Pottery is manufactured. Pop. 12,000.

Pasque Flower (*Anemone pulsatilla*). Perennial herb of the natural order Ranunculaceae. A



Pasque Flower. Bloom of the species of anemone, formerly used for colouring Easter eggs

native of Europe and N. Asia, it has a woody rootstock, and leaves very much divided into narrow segments. The dull purple, silky, solitary flowers are supported on stout erect stalks. The seeds have feathery tails 1½ in. long. The folk-name, from Lat. *Pascha*, Easter, is due to the fact that Easter eggs were often stained by rubbing them with the flowers.

Pasquinade. Abusive personal lampoon, or satire. The name is derived from a 15th century cobbler of Rome, Pasquino, famous for his sarcasms. After his death a statue found near his stall was given the name of Pasquino, and to it wits secretly affixed their lampoons on public persons. Thus the lampoons themselves came to be termed *pasquinades*.

Pass. Low part of a water-parting or divide. Passes generally owe their origin to denudation produced by two streams, which rise close together but on opposite sides of the divide. Sometimes they occur where a river has breached a mountain range. They are of great economic value, since routes connecting the opposite sides of the divide will either cross them, or, in the case of modern rills, will tunnel below them, as in the case of the St. Gotthard Pass in the Alps, and Uspallata or Cumbre Pass in the S. Andes. See Carso.

Passacaglia. Old stately dance, probably of Spanish origin (*pasar*, to walk; *calle*, a street). The dancers were one or two in number. The music was constructed over a ground bass in triple time, a feature which led composers to

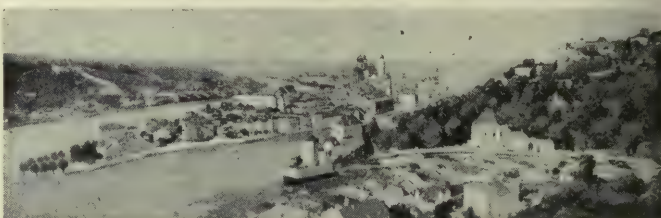
adopt it as a medium for displaying their fertility in devising variations. It was thus very much like the Chaconne (*q.v.*), though in the Passacaglia the theme might appear in any part. One of the most celebrated examples is Bach's Passacaglia in C minor for the organ.

Passage, WEST. Town of co. Cork, Ireland. It stands on the W. side of Cork Harbour, 6 m. from Cork, with a station on the Cork, Blackrock, and Passage Rly. It has a harbour and some shipping, and is also visited by pleasure seekers. Pop. 1,800.

Passaglia, CARLO (1812-87). Italian theologian. He was born at Lucca, May 2, 1812, joined the Jesuits at fifteen, became in 1844 a professor at the Collegio Romano, and was in favour with Pope Pius IX. His championship of Italian unity and opposition to the temporal power of the pope led to his expulsion from the Jesuit Society, and he settled at Turin, where the king made him professor of moral philosophy. In 1861 he became a member of the Italian parliament, and editor of *Il Mediatore*. Excommunicated in 1862, he died March 12, 1887.

Passaic. River of New Jersey, U.S.A. It winds first in a N.E. direction, and at Paterson turns S. to enter Newark Bay between Jersey City and Newark. At Paterson it makes a sheer descent of 50 ft. It is 98 m. long and navigable for about 10 m. to Passaic city.

Passaic. City of New Jersey, U.S.A., in Passaic co. It stands on the Passaic river, at the head of navigation, 13 m. N.W. of New York, and is served by the Erie and other rlys. Among its industries are the manufacture of chemicals, textiles, silk, rubber, leather, and



Passau, Bavaria. View from the north-east, near the confluence of the Inn, Danube, and Ilz. In the town are seen the towers of the cathedral of S. Stephen

metal ware. Settled about 1676, Passaic was incorporated in 1869 and became a city in 1873. Pop. 63,800.

Passamaquoddy Bay. Inlet on the E. coast of N. America. An arm of the Bay of Fundy, between the state of Maine, U.S.A., and the province of New Brunswick, Canada, it is 12 m. long and 6 m. wide, and forms a fine harbour, protected by a group of islands. Among the rivers flowing to the bay is the St. Croix. The bay is named from an Algonquin tribe, now nearly extinct.

Passant. In heraldry, an animal walking past in profile, with its dexter paw elevated. If its head is turned towards the spectator it is passant guardant, and if looking back over its shoulder passant regardant. See Heraldry, col. plate.

Passaro. Cape of Sicily. It forms the S.E. corner of the island and is a low, rocky projection on the E. side of the small bay of Porto Palo. Here Admiral Byng gained a naval victory over the Spanish fleet on Aug. 31, 1718.

Passarowitz OR POZAREVAC. Town of Yugo-Slavia, in Serbia. It lies near the Morava river, 13 m. E.S.E. of Semendria, 37 m. E.S.E. of Belgrade, and has considerable agricultural trade, and agricultural schools, being a centre of a

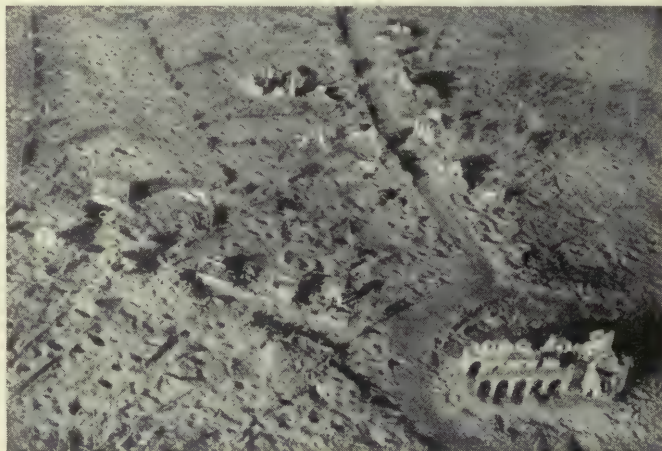
rich stock-raising and corn-growing country. The treaty of Passarowitz, signed on July 21, 1718, by Austria, Venice, and Turkey, with England and the Netherlands as mediators, assigned Morea to the Turks, but gave Austria the Temesvar, Wallachia as far as the Aluta, Belgrade, and other parts of Serbia. Pop. 13,000. See Turkey.

Passau. Town of Germany, in Bavaria. It lies on the Danube, here joined by the Inn and Ilz rivers, 92 m. E.N.E. of Munich, and is composed of the town proper, Ilzstadt, on the right bank of the Ilz, Innstadt, on the right bank of the Inn, and the suburb of Anger, on the left bank of the Danube. The steeply built town contains the fine cathedral of S. Stephen, possibly a 5th century foundation, rebuilt in baroque style between 1665-80, the Oberhaus, formerly a castle and later a prison, and many old houses. The industries include the manufacture of porcelain, pottery, leather, furniture, and paper. Pop. 20,000.

Passau, TREATY OF. Agreement to conclude hostilities between Roman Catholics and Lutherans, 1552. Signed by Maurice, elector of Saxony, the Lutheran champion, and Ferdinand, king of the Romans, on behalf of the emperor Charles V, its principal clauses provided for holding a diet to consider how best to prevent future religious warfare. It decreed that if the conference should prove abortive, peace should be continued; and gave free exercise of religion to both Protestants and Roman Catholics. See Augsburg, Peace of.

Pass book. Book given to each client of a bank in which particulars of his account are recorded, and so called because it passes between the two parties. Pass books are made up periodically by the banks, and usually the cancelled cheques are returned with them.

Passchendaele. Village and ridge of Belgium, in the prov. of W. Flanders. The former is $7\frac{1}{2}$ m. N.E. of Ypres, and stands on the ridge of the same name. Previous to the Great War it had 3,300 inhabitants, but was practically destroyed. The ridge, 200 ft.



Passchendaele, Belgium. Air view of the ruined village after its bombardment, showing the shattered church in right foreground

above the sea, extending from Ghelvelt on the south to the forest of Houthulst on the north, is the last elevation before the Flanders plain is reached. From the mound on which the church formerly stood, Bruges and Ostend can be seen in clear weather. The village and ridge were captured by the Germans, Oct., 1914, and strongly fortified, and were held until stormed by the British in Oct.-Nov., 1917. Lost in the German advance of April, 1918, these positions were regained by the Belgians in Oct., 1918. See Ypres, Battles of.

Passenger Duty. Tax levied upon railway travelling. It was imposed in 1842 at the rate of 5 p.c. on all money received from passenger traffic. It is only paid upon that obtained from first and second class fares, as an Act of 1883 abolished it in the case of all fares not exceeding a penny a mile, and it was not imposed on third-class fares when these were raised during the Great War. The Act also reduced it to 2 p.c. on short journeys in urban districts.

Passenger Pigeon (*Ectopistes migratorius*). Species of pigeon found in N. America, notable for



Passenger Pigeon. The North American species

its long wings and long narrow tail. It formerly occurred in vast flocks, and at its nesting sites every tree for many miles was laden with the nests. It was largely shot for the table, and in one year 15,000,000 birds were procured in Michigan and Pennsylvania. It almost disappeared in 1888, and is now apparently extinct, the last known survivor dying in the Zoological Gardens, at Cincinnati, in 1914. See Pigeon.

Passe-partout (Fr., passes everywhere). Term used in English as well as in French, both literally and figuratively, in the sense of an expedient for obviating difficulties. Thus it is applied to a master-key, i.e. to a key which opens a series of locks, the sub-

ordinate keys opening only one lock each; to an adjustable picture frame or mount; to strips of adhesive paper for the easy mounting of pictures or photographs; and, in printing and engraving, to a stock border which may be used with different centres.

Passepied or **TRINORIS**, also corrupted in English as *Paspy*, or *passy-measure*. An old dance of Breton origin, a variety of the Branle, in which dancers imitated shepherds, laundresses, etc., it was brought to Paris before 1600, and remained popular for nearly 200 years. The French ballets of the 17th and 18th centuries contain many examples. The music is in triple time, similar to that of the minuet, but much quicker.

Passeriformes, **PASSERINE** OR **PERCHING BIRDS**. Order of birds, distinguished by the presence of four toes, three in front and one behind, a certain type of palate, and the habit of constructing elaborate and finished nests, etc. The section includes the finches, warblers, thrushes, crows, swallows, shrikes, etc., numbering thousands of species and more than half the existing birds. They are named after *passer*, Latin for sparrow, a typical member of the order.

Passifloraceae. Passion-flower family, a natural order of trees, shrubs, and herbs. They are natives of tropical and sub-tropical regions, especially of S. America. They have mostly alternate leaves and showy, regular flowers. The fruit is a many-seeded berry or capsule, in some species edible.

Passim (Lat.). Scattered throughout (a book, etc.).

Passing Bell. Name given to the solemn tolling of a bell, usually of a parish church, at the death or "passing" of a parishioner.

Passing Notes. In music, essential notes of melody inserted between other notes which belong to the harmonies.

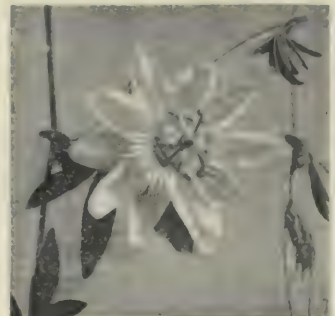
Passing of the Third Floor Back, **THE**. Morality play, written by Jerome K. Jerome. It was produced Sept. 1, 1908, at the St. James's Theatre, London, where it ran for 186 performances. The story tells how the stranger, an incarnation of Christian influence, appears in a Bloomsbury boarding-house and transforms the characters of all the inhabitants. Forbes-Robertson played the leading part. See Forbes-Robertson, Sir J.

Passion, THE. Term used in a religious sense for the sufferings and Crucifixion of Jesus Christ. It early became a custom in the Church to recite the story of the Passion as told in the Gospels, the narrative portion being sung to

Gregorian tones by a tenor, while individual speeches were allotted to other selected voices and the answers of the crowd were sung by a chorus. These musical compositions were known as *Passion music*.

Among the earliest composers to produce definite Passions in this form were the Spaniard Tommaso Ludovico da Victoria (1540-1613) and the Italian Francisco Soriano (b. 1549). A little later the German Heinrich Schütz (1585-1672) wrote four Passions and the Story of the Resurrection of Christ. Another German, R. Keiser (1673-1739), introduced the chorale. German genius, profoundly influenced by the Reformation, was particularly sensitive to this form of music, and in the hands of J. S. Bach Passion music attained its highest development. Elsewhere it was gradually modified and assumed the form of oratorio (*q.v.*).

Passion Flower (*Passiflora*). Large genus of climbing herbs and shrubs of the natural order Passi-



Passion Flower. Foliage and bloom of the American climbing shrub

floraceae, natives chiefly of the warmer parts of America. They have variously lobed or undivided leaves, mostly alternate, and stout tendrils by which they climb. The flowers, which are of remarkable structure, are often large and showy, coloured blue, purple, red, white, or yellow. The cup-shaped receptacle bears 4-5 sepals, an equal number of petals, and a corona of very many spreading filaments. The sexual organs are borne above the corona on an organ known as the gynophore; there are 4-5 spreading stamens with large anthers, and above them is the ovary supporting the clubbed styles. The name (*flos passionis*) is due to the fact that the early Jesuits, with a little straining of the facts, saw in the flower numerous emblems of the Crucifixion.

Passionists. R.C. order of priests and laymen, entitled the Congregation of Discalced Clerks of the Most Holy Cross and Passion

of Our Lord Jesus Christ. It was founded about the year 1730 by S. Paul of the Cross (1694-1775), and was formally approved by the pope in 1741. Its special work is to conduct missions and retreats, and to undertake parochial work when desired by the bishop. The usual life vows are taken. The order came to Britain in 1841, and has nine houses there, the headquarters being at Highgate, London. In America it has over a hundred houses.

Passion Play. Scriptural drama presented periodically at Oberammergau (*q.v.*), Bavaria. Resembling the medieval miracle and mystery plays, and representing Christ's Passion, it is usually in 18 acts and the same number of tableaux, and is presented by 600 performers, all natives of Oberammergau. Preceded by divine service, including the Mass, it is regarded as a solemn ceremonial, the performers accepting small fees and the profits going to charity. Between May 14-Sept. 24 30 performances are given on an open-air stage before a covered auditorium, holding 4,000 people. The play originated in a vow taken by survivors of the pest in 1633 to present once in every ten years living pictures of Christ's Passion, a vow since observed with but few exceptions. See The Passion Play at Oberammergau, F. W. Farrar, 1890; Plays of Our Forefathers, C. M. Gayley, 1908.

Passion Week. In the ecclesiastical year, the week following Passion Sunday, or the 5th Sunday in Lent. The name is sometimes applied to Holy Week (*q.v.*).

Passive Resistance. Act of resisting a law or system of government without recourse to active or militant methods. It is usually resorted to on conscientious grounds, which may be purely moral, or in which political and national considerations are involved. Belgium under the German occupation, 1914-18, was an instance of the latter, and the refusal of Quakers and others to pay tithes and impositions of the Church of England an example of the former. The civil disobedience and boycott movement of Gandhi in India was passive resistance, as was refusal to undergo military service in England.

The term is, however, mainly associated with the Free Church passive resistance movement, which originated with the passing of the Education Act of 1902. These Free Churchmen consistently objected to pay a rate which provided for sectarian teaching in voluntary schools. They objected to pay

that portion of their local rate devoted to education, but some paid when summoned after making a protest in public. Others refused to pay when summoned, and allowed their goods to be distrained upon for the amount in question. See Clifford, John.

Passmore Edwards Settlement. Name by which the London social welfare institute, the Mary Ward Settlement (*q.v.*), London, W.C., was known from 1897-1920. It was named after J. Passmore Edwards (*q.v.*).

Passover (Heb. *pesach*; Gr. *pascha*). Ancient Jewish feast. Called in the Bible the Lord's Passover, and instituted at the time of the exodus, it was so named from the passing over by the destroying angel of the thresholds of the Israelites, red with the blood of the sacrificial lamb, when all the first-born of Egypt were smitten (Ex. 12). It was afterwards and still is observed as a symbol of the deliverance and of the beginning of harvest, the seven days of observance beginning on Abib or Nisan 14. The whole feast is also called the festival of unleavened bread. In modern times the festival closes with the words, "Next year in Jerusalem." It was observed by Christ the night before His crucifixion, when He instituted the Eucharist; and He is called "our Passover" (1 Cor. v, 7-8). See Easter; Last Supper; consult also History of the Jewish Church, A. P. Stanley, 1876; Hebrew Feasts, W. H. Green, 1886.

Passport (Fr. *passoport*). Warrant of protection or safe-conduct and licence to travel granted by the authorities of a country to its subjects who desire to visit foreign countries. Every sovereign state has the right to regulate the admission or exclusion of foreigners to or from its territories. For this reason the possession of a passport by travellers is desirable, though in normal times the regulations restricting foreign travel are not, in most cases, very severe. In wartime, and in all times of unrest, a passport becomes a necessity for all foreign travel, and may be required to be shown at any moment to the police or other competent authority.

In the United Kingdom passports are issued by the foreign office to British subjects on the recommendation of a banking firm, mayor, magistrate, minister of religion, barrister-at-law, physician, etc., resident in the U.K. The applicant's birth certificate may also be required, and a space is left on the passport for a recent photograph of the applicant. In

1921 the fee for a passport was 7s. 6d. and it was recommended that application should be made four clear days before the day on which it was proposed to leave the country. Visés by the authorities of countries through which the traveller passes are often required.

Password. Military term denoting a predetermined word or phrase which is accepted by the sentries and outposts as evidence of the *bona fides* of persons wishing to pass through the lines. All persons who are authorised to leave the camp or position are acquainted with the password and, on returning, repeat it when challenged by the sentry.

Passy. Western suburb of Paris, France. It is in the 16th arrondissement, near the Bois de Boulogne. It extends from the Trocadéro to the fortifications, and is a favourite residential quarter. The Pont de Passy is adorned with some fine statuary by G. Michel. See Paris.

Past and Present. Study of social and political conditions by Thomas Carlyle. It was first published in 1843. Developing ideas earlier expressed in Sartor Resartus and Heroes and Hero Worship, it discusses the problems of capital and labour, aristocracy and people, as they appeared in the first half of the 19th century, and contrasts them with social conditions in the Middle Ages, illustrated by the chronicle of the abbey of Bury St. Edmunds, written by Jocelin de Brakelond (c. 1200).

Pastassa or **PASTAZA.** River of central Ecuador, S. America. Rising in the Andes and flowing generally S.E. for some 400 m., it joins the Marañon 30 m. W. of the point where the last-named river receives the waters of the Huallaga.

Paste (prob. Gr. *pastē*, barley broth). Viscid mixture of flour with water or other liquid, especially when used as an adhesive composition for joining together pieces of paper, etc. For this purpose it is made of about 2 lb. of flour to a gallon of water, with an admixture of some starch, 1 oz. of alum, or 1½ oz. of resin. The addition of a little carbolic acid preserves it from mould. The flour is mixed slowly with the water into a thin batter and boiled, the mixture being stirred meanwhile, until a smooth paste is obtained.

The word also denotes any soft plastic material used by potters, and a composition of which imitation gems are made.

Paste-board. Paper pasted together to make thick sheets. After pasting it is pressed, dried,

calendered, and cast into moulds. It is largely used as mounts for pictures. Bristol board is a finer paste-board for pen-and-ink drawing. The word also denotes the wooden board upon which paste crust is rolled. See Card-board; Strawboard.

Pasteur, Louis (1822-95). French biological chemist and physiologist. Born at Dôle, Dec. 27,



Louis Pasteur,
French biologist

1822, and educated at the École Normale, Paris, he became professor of physics at Dijon, 1848; of chemistry at Strasbourg, 1849; in 1854 of chemistry at Lille; and in 1857 scientific director at the École Normale, Paris. In 1863 he was appointed to the École des Beaux Arts as professor of geology, physics, and chemistry, and from 1867-89 he was professor of chemistry at the Sorbonne. He established the Pasteur Institute in Paris, 1888, and remained its director until his death, Sept. 28, 1895.

Pasteur was one of the most brilliant investigators of the 19th century. He first attracted notice by his solution of the problem presented by isomerism (*q.v.*), which ultimately led him to the discoveries connected with fermentation, with which his name is universally associated. In connexion with the latter he showed that vinous, acetous, and lactic fermentations were caused by micro-organisms existing in the air, and he formulated methods for the prevention of "diseases" in wines, beer, vinegar, etc. At the request of the French government he undertook a study of silkworm disease, indicated the bacterial cause and cure, afterwards isolating the bacillus of anthrax, an epoch-making discovery which led to his preparation of vaccines for various diseases, *e.g.* fowl cholera, rabies, and diphtheria. These last results, which have been extended by followers of Pasteur, have left their imperishable mark on preventive medicine throughout the world. See Frontispiece, vol. 2; Bacteriology; Hydrophobia; Milk.

Bibliography. Works: Fermentation, 1876; The Attenuation of the Virus of Fowl Cholera, 1886; Researches on Vaccination for Rabies, 1886; Rabies, 1890; consult also Lives, P. Frankland, 1878; R. Valéry-Radot, Eng. trans. 1902; Pasteur and after Pasteur, S. Paget, 1914.

Pasteur Institute. Research laboratory established for the purpose of combating hydro-

phobia; named after Louis Pasteur. The first and most important, L'Institut Pasteur, was erected in Paris by public subscription, and opened Nov. 14, 1888. The work is divided into six sections, the largest of which deals with anti-rabies treatment, from the preparation of the vaccine to the inoculation of sufferers, as well as with statistics of cases, etc. Other departments are concerned with bacteriology in its various branches, and its application to hygiene, including investigation into prophylactic measures against epidemic and infectious diseases.

Subsequently other Pasteur institutes were established throughout Europe, the U.S.A., etc., including one at Kasauli, in the Himalayas. See Hydrophobia.

Pasteurisation. Preservation of wine, milk, and other liquids from deterioration by heating. Named after Pasteur, who showed that sufficient heat killed all micro-organisms, its most common application is for the preservation of milk. The milk is kept for 10 to 20 minutes at a temperature of 140° to 180° F., in special vessels known as pasteurisers. Pasteurisation of milk is most effective in closed vessels, in which the milk is kept constantly agitated to prevent the formation of a skin on the surface. See Milk.

Pasticcio (Ital., a pie). In music, a medley of favourite excerpts from different operas, whether or not by the same composer is immaterial. It was very popular during the 18th century. Although both Handel and Gluck lent themselves to this form of entertainment, its inherent lack of homogeneity led to its decline. The Beggar's Opera (revived at Hammersmith, June, 1920) has a pasticcio of British ballad tunes and popular airs.

In art and literature pasticcio or pastiche (Fr.) denotes a work made up from fragments of other works, or borrowing motives or suggestions from them.

Pasto. City of Colombia, S. America. In the dept. of Cauca, it stands at an alt. of 8,650 ft., at the foot of Pasto Volcano (alt. 14,000 ft.), 140 m. N.E. of Quito. It is on the route for the great pass between Quito and Popayán, and is the seat of a bishop, with a university. Its manufactures include decorated pottery, hats, and blankets and other woollen goods. Founded by Pizarro in 1539, it was twice destroyed in the wars of independence and was ruined by an earthquake in 1827. Pop. 28,000.

Paston Letters. Series of letters and other documents written between 1422 and 1509, mostly

addressed to or written by members of the Paston family. Rising from obscurity about 1400, the Pastons, of a village of that name near North Walsham, Norfolk, acquired land and influence in the county. William Paston (1378-1444) was justice of the common pleas under Henry VI. His son John (1421-66) acquired by doubtful means Caister Castle and the other estates of Sir John Fastolf, for which the family had to fight as well as litigate. Sir John Paston (1442-79) was a courtier of Edward IV, but went over to the Lancastrians.

The letters and other papers, of which nearly 1,200 exist, form an invaluable record of the political, social, and economic life of the time, especially of the troublous times of the Wars of the Roses. A complete collection, with valuable introductions, was edited by James Gairdner, 1872-75. A new ed. by him, in 6 vols., appeared 1904.

Pastor (Lat. *pascere*, to feed). Literally a shepherd, but now used for a minister of religion, especially among the Lutherans. The office is known as the pastorate. See Lutheranism.

Pastor. Bird, known also as the rose-coloured starling (*Pastor roseus*). The plumage is pink on



Pastor, or rose-coloured starling,
an occasional visitor to England

W. S. Burridge, F.Z.S.

the back and under parts, violet-black on the head, neck, and tail, and greenish-black on the wings. It nests in W. Asia and S.E. Europe, and feeds largely on locusts. At times it migrates in large numbers to W. Europe, and occasional specimens are met with in England.

Pastoral. Literary term denoting poetry, romance, or drama setting forth the shepherd's life in a more or less conventionalised or idealised fashion. In the more modern manifestations it may be said to be the homage which artificiality pays to simplicity. Originating in the idylls of the Greeks of Sicily, notably Theocritus, which were imitated by Virgil in his Eclogues, pastoral poetry was revived by the Renaissance poets on the Continent, and in England became something of a new type in The Shepherd's Calendar of

Edmund Spenser and his followers, though it degenerated in the artificiality of the 18th century.

Pastoral drama—which has been described as the bucolic idyll in dramatic form—flourished in Italy from the close of the 15th century, and may be said to have reached its height with Tasso's *Aminta*, 1573, and Guarini's *Pastor Fido*, 1585. Those plays had considerable influence on the pastoral drama in England, which, however, was marked by artificiality even in its most notable examples, such as Fletcher's *The Faithful Shepherdess*, 1610, and Jonson's *The Sad Shepherd*, 1636. Outstanding examples of pastoral romance are the *Diana of the Spaniard* Montemayor, c. 1559, and Sir Philip Sidney's *Arcadia*, 1590. In pastoral lyrics the century that followed Spenser was particularly rich. Pastoral setting or allusion has frequently been a convention in the writing of funeral elegies from Spenser's *Astrophel*, 1586, and Milton's *Lycidas*, to Matthew Arnold's *Thyrsis*, 1861. See *English Pastorals*, with introduction by E. K. Chambers, 1906; *Pastoral Poetry and Pastoral Drama*, W. W. Greg, 1906.

Pastorale. Musical term denoting (1) a 17th century kind of opera with a rural or idyllic subject; (2) an instrumental piece suggesting by conventional means, such as the use of compound time and of placid and flowing melody, the atmosphere of the countryside. A typical example of this kind is the pastoral symphony in *The Messiah*. Beethoven's *Pastoral Symphony*, No. 6 in F, is the most extended example.

Pastoral Letter. Name given to a written communication by a bishop to the clergy and laity of his diocese on matters of Church organization and government. It is so called from the fact that a bishop is regarded as a spiritual shepherd. The Epistles of S. Paul to Timothy and Titus are called pastoral epistles.

Pastoral Staff. Name for the symbol of authority given to a bishop or abbot at his consecration, also known as a crosier (*q.v.*). Some authorities, probably mistakenly, distinguish them.

Pasture. Ground used for grazing domestic animals. It may be either natural or artificial, permanent or temporary. An extensive form of pasture is the rough mountain and heath land used for grazing. This is for the most part natural herbage, which the farmer has done nothing to create and which he does but little to maintain. Its improvement takes the

form of heather-burning every eight or ten years, a certain amount of bracken cutting in the more accessible areas, and open draining where at small expense the surplus water may be got rid of.

Temporary pastures consist of fields which during one, two, or more years are allowed to rest from the plough, and on which the herbage is mown for hay or grazed by stock, or treated partly in one way and partly in the other. In its simplest form a temporary pasture is represented by the year of seeds in the Norfolk four-course rotation. The herbage may consist only of clover, usually red, or only of rye-grass, usually Italian, or of a mixture of these two classes of plant. Where the land will grow clover successfully as often as every fourth year, there is much to be said for excluding grass, as clover collects large quantities of nitrogen from the air, and thereby greatly enriches the soil in this essential element of plant food.

Permanent pasture had its origin in various ways. For the most part it has at one time been under cultivation, as is evident from the fact that the great majority of the fields are in ridge and furrow. In the case of a pasture a hundred years or more of age, it is impossible to obtain details of its early history, but in view of the limited number of pasture plants that were then available as seed, it is fairly safe to assume either that the land was not deliberately sown down, or that it was seeded with rye-grass, with or without the addition of clover.

Manurial treatment can have an immense influence in the way of encouraging certain species and in repressing others. This fact was first brought prominently out in the experiments at Rothamsted on permanent grass land. The herbage on the plots was much the same to begin with, but after a few years of manurial treatment the plants growing on certain of the areas were strikingly dissimilar. Thus sulphate of ammonia encouraged shallow-rooted plants like agrostis, sheep's fescue, and smooth-stalked meadow grass; while nitrate of soda stimulated the development of deep-rooted plants such as rough-stalked meadow grass and rye-grass. Nitrogen in any form encouraged grasses and weeds and repressed clovers, while potash stimulated clovers.

Of late years an agent that is invaluable in the improvement of pasture has been placed at the farmer's disposal, namely, basic slag. Used at the rate of five to ten cwt. per acre, it often doubles

or trebles the value of a pasture in two or three years.

Apart from manures, the main forms of improvement of field pastures are weed-cutting, harrowing, spreading mole and ant heaps, and draining. The first operation is performed in the height of summer, the others in winter or spring. Rational stocking, and admixture of sheep and cattle, also tend to improvement; but all these agencies are of small avail if the pasture is not fed with phosphates, especially basic slag.

In 1920, of the total area of 76½ million acres of dry land comprised in the United Kingdom, 21½ million acres were arable and 25 million acres under permanent grass, while some 15 million acres were returned as rough or mountain pastures used for grazing. Of the arable land some 5½ million acres were under temporary grass, clover, sainfoin, lucerne, etc., of which, in England and Wales, about two-thirds were made into hay, one-third being reserved for grazing.

During the Great War the necessity for an increase in the amount of home-grown food, chiefly corn and potatoes, resulted in the breaking up in England and Wales of nearly 1½ million acres of grass land, and its conversion to tillage. During the same period Scotland and Ireland added fully a million acres to their arable area. This action was partly voluntary, and partly the consequence of compulsion exerted by the boards of agriculture, working through local executive committees established for the duration of the war.

In New Zealand the chief indigenous grass is tussock grass, which affords excellent grazing for stock on the higher and rougher ground. It has a wonderful power of resisting drought. So-called English grasses and other pasture plants have been extensively sown on enclosed paddocks where dairying and stock-fattening are practised. Lucerne is now largely cultivated in New Zealand.

In South Africa comparatively little has been done to lay down pastures. Owing to the vast unoccupied tracts of land, the cheapness of the land, and the abundance of nutritious fodder growing in the veld, there was no necessity to improve the natural pastures.

In Canada and the U.S.A. the virgin prairie supplies much of the pasturage for stock, but in both countries much attention is now given to the creation of artificial pastures by the sowing of cock's-foot, timothy, fescues, peas, and clover. Lucerne (alfalfa) has attained to a very high place in the

tural economy of North America and of Argentina, its abundant yield and wonderful drought-resisting properties making it invaluable for the production of stock food, whether as pasture, hay, or silage. In the drier districts it is often cultivated by the aid of irrigation, to which it responds satisfactorily. See Cattle; Soil.

William Somerville, D.Sc.

Patagonia. Extensive region forming the southern extremity of S. America and belonging to Argentina and Chile. It extends S. from the Rio Colorado to the Strait of Magellan, which divides it from the islands of the Tierra del Fuego archipelago. Originally claimed by both Chile and Argentina, a treaty between these countries was ratified in 1881, which apportioned the territory E. of the Andes to Argentina and the W. coastal region to Chile.

Argentine Patagonia is divided into the territories of Rio Negro, Neuquen, Chubut, and Santa Cruz. It is bordered on the W. by the Andes, which constitute the water-parting of the Atlantic and Pacific systems, with an alt. of from 3,000 ft. to 6,000 ft.; the range is broken by several lakes lying partly in Argentina and partly in Chile. The terrain slopes in a succession of terraces towards the E., interspersed by numerous ravines and valleys. The chief rivers are the Colorado, Rio Negro, Chico, Chubut, Gallegos, and Santa Cruz, mostly impeded by rapids, and there are a large number of salt lakes and lagoons. Though arid, sterile, and bush-covered for the most part, the valleys and margins of rivers in the N. portion are fertile. The climate is cool and violent winds prevail.

Sheep, cattle, and horses are reared in the more favoured districts. The mammals include guanacos, armadillos, viscachas, pumas, foxes, and skunks; among the numerous birds are condors, vultures, hawks, partridges, rheas, and flamingoes. The native Indians, noted for their tall stature, are nomadic and thinly scattered over the territory. The most important tribes, the Tehuelches and Gennakens, are fast dying out. Area, 322,904 sq. m., or, including the E. section of Tierra del Fuego, 331,203 sq. m. The pop. is est. at 106,625.

Chilean Patagonia is a coastal strip W. of the Andes, consisting of the provs. of Chiloe and Magallanes, which lie S. of the prov. of Llanquihue. The coast is fringed with innumerable islands, including the archipelagos of Chonos, Queen Adelaide, and Madre de Dios. The coasts are steep and rugged, and

cleft by numerous fiord-like openings. The lower slopes of the mountains are densely forested, yielding valuable timber. There are no rivers exceeding 15 m. in length. The climate is raw and damp, and in



Patas Monkey of West Africa

the S. snow and sleet are of almost daily occurrence. Area, 72,334 sq. m. The pop. is est. at 119,900.

First seen by Magellan in 1520, Patagonia was afterwards visited by various Spanish and English explorers. Scientific explorations have more recently been made by Darwin, Fitzroy, and several Argentine travellers. See Chile; consult also *Through the Heart of Patagonia*, H. Hesketh-Prichard, 1902; *The Wilds of Patagonia*, C. Skottsberg, 1911.

Pataliputra. Capital of the Magadha kingdom in ancient India. Extending for 9 m. along the right Ganges bank, between the modern Bankipur and Patna, it is now submerged beneath 14 ft. of alluvium. Completed by Udaya, about 450 B.C., it was visited, about 300, by Megasthenes, ambassador of Seleucus to Chandragupta's court. Remains of its palisaded walls, whose many gates and towers he described, have been recovered. Asoka (q.v.) added masonry walls, and held there the 3rd Buddhist council about 246. In the 4th century of our era the city revived under the Gupta dynasty, and the Chinese pilgrim, Fa-hien, found it a flourishing centre of Buddhist monasticism. By the 7th century it had become a heap of ruins. See Magadha.

Patan. Town of Baroda, India. It is 62 m. N.W. of Ahmadabad, and is one of the oldest towns in Gujarat. It manufactures weapons, silks, and cottons, contains over 100 Jain temples, and is noted for its Jain palm leaf manuscripts. Mahmud of Ghazni in 1024 captured Anhilvada, the ancient capital of the Gujarati kingdom, of which Patan occupies the site. Pop. 28,300.

Patani. Moulthou or prov. of Siam. It occupies the S.E. of the country, with a coast on the S. China Sea, and a land boundary with British Malaya. It is drained by the Patani, the largest of many N.-flowing streams. Tin, lead, gutta-percha, and timber are exported. It was formerly an independent state, but was annexed to Siam in 1832. Pop. 295,000.

Patas Monkey (*Cercopithecus ruber*). Large and brilliantly coloured guenon, native of W. Africa. It is an agile, long-tailed species, of a foxy red colour on the upper parts and white below. The face is blue, with long hair on the cheeks, a narrow black band above the eyes, and moustache-like lines of the same colour on the upper lip. The length of head and body is about 16 ins., and that of the tail the same. See Monkey.

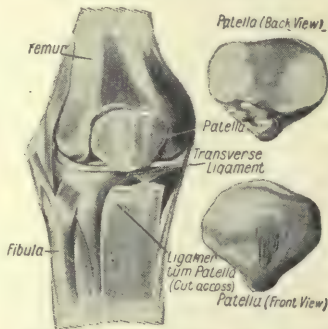
Patay. Village of France. In the dept. of Loiret, it is 13 m. N.W. of Orléans. Here a battle was fought between the English and the French, June 19, 1429. Joan of Arc was continuing her victorious career, and to check her the duke of Bedford sent out a force from Paris to the assistance of the English near Orléans. Under Talbot, this reached Patay, not far from Orléans, only to learn that the English leader, the duke of Suffolk, was a prisoner. Moving forward, the English came unexpectedly into contact with the scouts of a French force, chasing a stag. Urged on by the Maid, the French men-at-arms engaged the enemy before the English bowmen were ready. The fight ended in the defeat of the English; Talbot was made a prisoner, and only a remnant of his army got back to Paris.

Patch. Small piece of court plaster or black silk worn on the face. It was used to conceal a scar or blemish, or to enhance beauty by contrasting with the fairness of the skin. It came into fashion in the reign of Charles I, its use being banned by the Puritans. After the Restoration it was worn extravagantly and in many shapes.

Pateley Bridge. Market town of Yorkshire (W.R.), England. It stands on the Nidd, 10 m. from Ripon, with a station on the N.E. Rly. The chief industries are the mining of lead and the quarrying of stone, while sheep and cattle fairs are held. S. Mary's Church is modern. Near the town, which was made a market town in the 14th century, are some caverns with stalactites and stalagmites, discovered in 1860. Market day, Sat. Pop. 2,500.

Patella OR KNEE-CAP. Sesamoid bone, i.e. a bone developed in the tendon of a muscle, situated at the front of the knee-joint. It is roughly triangular in shape. The posterior surface is covered with cartilage, and articulates with the femur or thigh-bone. The upper margin passes into the tendon of the quadriceps extensor or large muscle forming the front of the thigh. From the lower margin springs the infra-patella tendon, by which the bone is fastened to the anterior surface of the tibia.

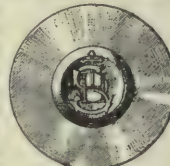
Dislocation of the patella may be outwards, inwards, or sideways, the first being much the common-



Patella. Left, knee-joint from the front, showing position of patella; right, front and back view of bone

est form. Reduction is effected by manipulation. Fracture of the patella may be the result of direct violence, or may follow a vigorous muscular effort, such as may be made in an endeavour to prevent a fall, the bone breaking transversely across the middle. Operative treatment gives the best results. See Anatomy; Knee.

Patén. In the service of the Eucharist, the plate on which the consecrated bread is placed; also, in the Mass, the plate on which the Host is laid. The term is also used for the covering of the chalice. It is usually of gold or silver - gilt. See Eucharist.



Patén. Plate used in the service of the Mass

Patent (Lat. *patere*, to lie open). Official document issued by the sovereign conferring an exclusive right or privilege. It is used in two main senses. Titles of nobility are conferred by letters patent. A patent is the sole right for a term of years of the proceeds of an invention, the person who holds such a right being called the patentee. Patent leather is a kind of leather to which a polished surface is given by a process of jappanning.

PATENT LAW AND PRACTICE

R. T. Lavender, Assistant Examiner, H.M. Patent Office

This article deals with a branch of law which is of great importance commercially. Other branches dealt with include Company Law and Ecclesiastical Law. See also Copyright; Monopoly; Trade Mark

The patent law of the United Kingdom may be said to date from the statute of monopolies, 1624. Before the passing of the statute patents were granted by the crown with a view to improving the economic conditions of the country, industry being encouraged by prohibiting or restricting competition. The grant of monopolies freed from competition led to abuses prejudicial to the state, and was followed by their restriction by statute. According to the statute of monopolies the grant of a patent was restricted to the "first and true inventor," who according to present-day practice may comprise several classes of persons, and includes not only the actual inventor, but the first importer of an invention into the United Kingdom. The subject matter of a valid patent must comprise "a manner of new manufacture." Moreover, it must not be contrary to law or morality.

Novelty alone does not necessarily imply invention, and of itself may be insufficient to sustain a

patent. Evidence of ingenuity must be disclosed. If a known article is applied to a new purpose, the application must disclose inventive ingenuity, if a valid patent is to be secured. In 1910 it was held that a patent for a vacuum flask for holding hot liquids, etc., without substantial change of temperature, was invalid on the ground that it was merely an adaptation for another purpose of a vacuum flask constructed, in 1893, by Professor Dewar for storing liquid gases.

A patent is invalid, if before the date of the patent application the invention has been publicly disclosed, either by a prior user or by an earlier description. By the Patents Act of 1902, the investigation through prior published specifications is restricted to 50 years from the date on which application is made. A patent right secures to the grantee the exclusive right to manufacture and sell or to grant licences for these purposes, and an infringer may be restrained and made liable for damages.

In the United Kingdom an application for letters patent in respect of inventions is made upon forms obtainable at the Patent Office, London, or at any post office, where also may be obtained the stamps to be affixed to the forms which require them. An application may be accompanied by a provisional specification, in which is described the nature of an invention, or by a complete specification, in which is particularly described and ascertained the nature of the invention and the manner in which it is to be utilised. In the former case, the provisional specification may be followed, within nine months from the date of the application, by a complete specification, in which is the particular description, followed by a statement of claim. The lodging of a provisional specification confers no protection upon an applicant, unless the application is completed later by lodging a complete specification.

The search for novelty prescribed by the Patents Act of 1902 gives to the comptroller the power of refusing the grant of a patent in cases in which the invention has been wholly and specifically claimed in specifications to which the search has extended. Complete specifications may be amended at the instance of the applicant to distinguish an invention from those described in published specifications of earlier date. Alternatively, the comptroller may insert in the specification, by way of warning to the public, statutory references by number to any earlier published specifications held to describe or claim an applicant's invention. An inventor may, before applying for a patent, place his invention on view at an exhibition certified by the board of trade without invalidating, by reason of prior publication, a patent which he may subsequently obtain.

The normal protection period afforded by a patent is now 16 years; this period may, however, be extended, if it can be shown that during this time the patentee has received inadequate remuneration, having due regard to the merits of the invention, and the lapse of time between the grant of the patent and the date at which the invention became a successful commercial product.

Before a patent is granted, but after the acceptance by the Patent Office of the complete specification, interested parties may, within two months, oppose, and, if successful, prevent the sealing of the patent, or obtain an amendment of the complete specification. An opposition can be based only upon one

or more of the following grounds: That the invention for which protection is desired has been obtained from the opponent, or from a person of whom he is the legal representative; that it has been patented in the country on an application of prior date; or that the complete specification covers an invention which is not in the provisional specification, and that the invention forms the subject matter of an application made by the opponent in the interval between the leaving of the complete and the provisional specifications. Oppositions are conducted before the comptroller, from whose decision an appeal lies to the law officers of the crown.

A specification may, after its acceptance, be amended, either by way of disclaimer, correction, or explanation, provided that the specification, after amendment, does not contain an invention substantially larger or different from the invention claimed before the amendment.

An important provision of the Act of 1907 deals with the revocation of patents worked outside the United Kingdom. Until the passing of this Act it was not an uncommon practice for patent rights to be secured in the United Kingdom, and for the protected product to be manufactured entirely abroad. By section 27 of this Act it is enacted that at any time not less than four years after the date of a patent, any person may apply for the revocation of a patent on the ground that the protected product or process is manufactured or carried on wholly or largely outside the United Kingdom. The fees payable for a patent are, £1 with the application, £3 when lodging the complete specification, and £1 at the time of sealing. No further fees are payable until the expiration of four years, when the scale of charges becomes £5 for the fifth year, £6 for the sixth year, and so on until the sixteenth year, when £16 is chargeable. See British, Colonial, and Foreign Patents, C. A. Day, 1895: Patent Laws of the World, W. Carpmael, new ed. 1899.

Patent Medicine. Preparation sold as a cure for, or palliative of, some disease or ailment of the human body. In the composition of such the maker, proprietor, or vendor claims to have some occult secret or art. A patent medicine is also one advertised, held out, or recommended to the public as a proprietary medicine, or as a specific for curing any physical malady, and one to which the owners claim an exclusive right of sale, either

under a patent or not. In Great Britain, the Medicine Stamp Act, 1812, imposed a duty on patent medicines, the duty being indicated by a stamp on the box or bottle, etc., in which the preparation is sold. The British Medical Association has published a handbook containing full particulars of the chief patent medicines, including an analysis of their composition, cost of production, and selling price. In 1913 a parliamentary select committee held an inquiry into proprietary remedies and issued a report in 1914.

Patent Office. Government office supervising, under the general direction of the board of trade, the grant of all patents. It employs a large staff, under a comptroller-general, to examine the genuineness of applications submitted, and the offices are in Southampton Buildings, London, W.C. The office has a valuable scientific library.

Pater, JEAN BAPTISTE JOSEPH (1695-1736). French painter. Born at Valenciennes, he studied under



J. B. J. Pater,
French painter

Watteau in Paris. A slavish follower of Watteau's manner, without Watteau's delicate and refining touch, he was received into the Academy in 1728 as a painter of *fêtes galantes*. He died in Paris, July 25, 1736.

Pater, WALTER HORATIO (1839-94). British critic and essayist. He was born at Shadwell, near



Walter H. Pater,
British critic
Elliot & Fry

London, August 4, 1839, the son of a physician of Dutch ancestry, and educated at King's School, Canterbury, and Queen's College, Oxford. He became a fellow of Brasenose College in 1864, and passed most of his life at Oxford, spending his vacations in travel on the Continent. A visit to Italy in 1865 turned a mind, already under the influence of Ruskin, in the direction of Renaissance art, and inspired a number of essays. These, collected and issued in 1873, obtained wide recognition as *Studies in the History of the Renaissance*.

In 1885 appeared his romance of Marius the Epicurean, an apologia for Hedonism in its highest form

and the pursuit of beauty. His other publications include *Imaginary Portraits*, 1887; *Plato and Platonism*, 1893; *Greek Studies*, 1895; and appreciations of Wordsworth, Coleridge, Rossetti, and others. A collected edition was published in 1901. Pater died July 30, 1894. See Lives, F. Greenslet, 1904; A. C. Benson, 1906.

Paterno. Town of Sicily, in the prov. of Catania. It stands at the foot of Mt. Etna, 13 m. by rly. W.N.W. of Catania. Built on the site of the ancient Hybla Major or Galeatis, celebrated for its honey, it has Greek and Roman remains. Its castle, founded in 1073 by Roger I, has a 14th century keep. Trade is carried on in oil, wine, and flax. Pop. 29,000.

Pater Noster (Lat., Our Father). Latin name for the Lord's Prayer (*q.v.*). Hence the word paternoster is sometimes applied to the larger beads of the rosary.

Paternoster Row. London thoroughfare. Known first as Paternoster Lane, it runs W. from Cheapside to Amen Corner, Warwick Lane. Long associated with the publishing trade, still represented here by the firms of Blackwood, Longmans, Nelson, and others, it was originally inhabited by the makers of prayer-beads, the dealers in which, known as paternosterers, moved here from St. Paul's Churchyard in the 13th century, and the Row was named after them. At the E. end until the Great Fire stood the church of St. Michael in the Quern (corn market). Two gates of the wall around Old St. Paul's, one in Paul's Alley, the other in Canon Alley, opened into the Row; within them stood the bishop's palace.

On the W. of Queen's Head Passage, on the site of Dolly's Chop House, pulled down in 1883,



Paternoster Row, London, looking west from Fanner Alley

was one of the old inns of court. Panyer Alley was a station for bakers who sold bread from panniers. Castle Inn, kept by Tarlton, the Elizabethan jester, stood between Panyer Alley and Queen's Head Alley. The Chapter coffee-house was famous in the 18th century as a publishers' meeting-place. See *Anon Court*.

Paterson. Township of New South Wales. It stands on Paterson river, 132 m. by rail from Sydney, and is the centre of a rich dairying and citrus fruit district. Pop. of district, 13,500.

Paterson. City of New Jersey, U.S.A., the co. seat of Passaic co. It stands on the Passaic river, 15 m. N.W. of New York, and is served by the Erie and other rlys. and the Morris canal. The river here makes a descent of 50 ft., and provides ample water-power for the various industries. Silk is an important manufacture, Paterson being the chief centre in the U.S.A. Founded in 1791, Paterson became a township in 1831 and a city in 1861. Pop. 135,000.

Paterson, ROBERT (1715-1801). Scottish Covenanter, known as Old Mortality. Born near Hawick, April 25, 1715, he was a mason by trade. As such he spent 40 years of his life travelling round the country, erecting or repairing memorial stones on the graves of martyred Covenanters, leaving his wife and family to shift for themselves. He died Jan. 29, 1801. Paterson's eccentric life suggested to Scott the theme of *Old Mortality*.

Paterson, WILLIAM (1658-1719). British financier. Born at Tinwald, Dumfriesshire, April, 1658, he left Scotland about 1685. He tramped through England, living for a time in Bristol, and then made his home in the Bahamas. Returning to England about 1690, he entered business life in London, and in 1694 was affluent enough to found the Bank of England, the deed on which his fame rests. Less successful, however, was the Darien Scheme (*q.v.*), which he originated after he ceased to take part in the management of the Bank and had left London for Edinburgh. He sailed to Darien in 1698, and returned with the survivors in 1699. Afterwards he was engaged in arranging the financial relations between England and Scotland after the union in 1707. He died Jan. 22, 1719, having written a good deal on commercial and financial matters.

Patesi. Sumerian name for the ruler of a city-state in early Babylonia. It regarded him as the steward of the city-god, in whose name he administered its affairs.

The office might be inherited, especially when local rule was strong and autonomous. See *Babylonia*; consult also *Patesis* of the Ur Dynasty, C. E. Keiser, 1920.

Patey, SIR GEORGE EDWIN (b. 1859). British sailor. Born Feb. 24, 1859, he entered the navy in



Sir G. E. Patey,
British sailor
Russell

1872, and served in the Zulu War of 1879. Assistant director of naval intelligence, 1901-2, he was flag-captain of H.M.S. *Venerable*, Mediterranean station, 1902-4, and commanded the *Implacable*, 1905-7. In 1910-13 he commanded the 2nd battle squadron, 2nd div., and was commander-in-chief, Australian fleet, 1913-19. He was created K.C.V.O., 1913, promoted vice-admiral, 1916, and admiral, 1918.

Pathan. Name popularly denoting the Iranian peoples of E. Afghanistan and the N.W. frontier prov. of India. The predominant speech is Pushtu; the harsher dialects are spoken by the aristocratic N. tribes, the softer by the democratic S. tribes. The Pathans numbered in India (1911) 3,796,816. The term also denotes the early Mahomedan dynasties and architecture at Delhi (13th-15th centuries). A unit of Pathans, numbered the 40th infantry, is attached to the Indian army. See *Afridi*; *Mohmand*; *Waziri*.

Pathfinder. British light cruiser. She was torpedoed by a German submarine off the E. coast of Scotland, Sept. 5, 1914, when 259 lives were lost. She belonged to the Sentinel class of eight vessels completed in 1905, and was 370 ft. long, 38 ft. in beam, displaced 2,900 tons, and had a speed of 25 knots. Her armament consisted of nine 4-in. guns, ten 12-pounder and eight 3-pounder guns, and two torpedo tubes.

Pathology (*Gr. pathos*, disease; *logos*, discourse). Study of the essential nature of disease, particularly the structural changes and morbid processes in the body which are associated with disease. The investigator uses experimental pathology when he produces a disease in animals and studies its effects. The microscopic investigation of the tissues constitutes histology. The observation of morbid processes in sick persons is termed clinical pathology. The study of the changes in diseased tissues is sometimes called morbid anatomy.

Pathos (*Gr. pathein*, to suffer). Quality in life and art which touches the emotions, especially pity and compassion. It is usual to speak of pathos as if it were the antithesis of humour, but its appeal is too subtle to be so easily defined. It has, indeed, such affinities with humour that there is more of pathos in some laughter than in some tears. The extremes of tragedy are too terrible to be pathetic; they rise above or fall below an emotion so essentially gentle and personal.

The keynote of pathos is simplicity, an entire immunity from self-consciousness and self-assertion. It is "the sense of tears in mortal things," the other side of beauty, youth, and happiness.

Dickens was a master of pathos, but failed in depicting it



Pathan. Types
from the North-
west Frontier of
India

king and his fool, his patient forbearance with the fool's sharp-edged frivolities amidst all his distractions; and there is, perhaps, nothing more pathetic in English literature than the hopeless heart-break of his cry after the fool's death:

"Thou'lt come no more,
Never, never, never, never!"
King Lear's disasters, the fool's grim end, belong to tragedy; but here Lear's grief has the note of common, universal sorrow that reaches all hearts by the homelier way. Pathos is as inevitably spontaneous as it is elusive.

There is no pathos that is not so unremediated that it takes you unawares. It is a wholly artless expression of feeling, and in art it must seem so, or it falls from the sublime into the more or less ridiculous.



as often as he succeeded, too often allowing it to degenerate into sentimentality by bestowing upon an action or a mood an elaboration which deprived it of its naturalness. The poignance of Lear's tragedy is heightened throughout by the pathetically incongruous love betwixt the old

Patiala. Native state and town of the Punjab, India. The state is the largest of the Phulkian states. It has an area of 5,412 sq. m. and a pop. of 1,400,000. The chief tribesmen are Sikh Jats. The capital is built round the old palace, and is a busy trading centre with some modern buildings. It lies W. of Ambala, with which it has rly. connexions. The maharaja, Sir Bhupindra Singh (b. 1891), joined the British expeditionary force at the outbreak of the Great War. Pop. 47,000. *See* Phulkian States.

Patience. Card game played by a single person. There are many hundreds of such games.

In one class the solution depends on pure chance after the shuffling of the cards. The player continues placing the cards in sequence according to some plan, until all are exhausted, the object being to do this within a certain number of times. In other varieties a certain degree of skill is necessary. *See* Patience Games, Cavendish, 1890;

Games of Patience, M. E. W. Jones, 1898; Patience Games, Hoffmann, 1902.

Patience OR BUNTHORNE'S BRIDE. Comic opera by W. S. Gilbert with music by Arthur Sullivan. It was produced at the Opéra Comique, London, April 23, 1881, and transferred to the Savoy, Oct. 10, 1881. In all the piece attained a run of 578 performances. It satirised the fashionable folly that attended the aesthetic movement of the period, but was distinguished by merit that secured it permanent vitality as well as brilliant ephemeral success. George Grossmith, Rutland Barrington, Richard Temple, Durward Lely, Jessie Bond, Alice Barnett, and Leonora Braham were in the original cast.

Patina. Green coloration seen on bronze or copper articles which have been exposed to a moist atmosphere for a long period. It is imitated by wetting bronze articles with dilute acids, or applying a paint of copper carbonate. Japanese patina is a glossy black with a violet sheen, or golden sheen with shades of red and grey, according to the metal used.

Patio. (Lat. *spatium*, space). Spanish word for the courtyard connected with a house. In metallurgy, the patio process is a method

of extracting silver from its ores by amalgamation. It is so called from being carried out on the floor of a patio. The ore is brought on to the patio in the state of thick mud, and stacked in a heap inside rough walls of clay and allowed some days to dry. The walls are then taken down and the ore spread on the floor, mixed with salt and turned with spades, for two or three days, mules being also turned on it and kept moving over it. This operation is continued while, first, a mixture of iron and copper sulphates, and then mercury, are added until the amalgamation is complete. The mass is then col-



Patio, in Spanish domestic architecture; the patio in the House of Pilate, Seville

lected and taken to washing boxes in which the slimes are washed away, leaving the silver amalgam behind. *See* Silver.

Patkai. Hill range of Assam, India. It separates Assam from Burma and gives rise on the S. to the headwaters of the Chindwin.

Patkul, JOHANN REINHOLD VON (1660-1707). Livonian nobleman. The son of a Swedish officer, he was born in a Stockholm prison, where his parents were incarcerated

in 1660. Patkul was accused, in 1692, of high treason against the Swedish government, and was compelled to leave his country. In 1698, he offered his services to Augustus II of Poland, who was preparing for war with Charles XII of Sweden, and then passed to the service of Peter the Great, on whose behalf he negotiated, in 1703, an alliance with Augustus II. Later Patkul, although the representative of a foreign power, was arrested, accused by Augustus II

of double dealing, surrendered to Sweden, and executed, Oct. 11, 1707.

Patmore, COVENTRY KERSEY DIGHTON (1823-94). British poet. Born at Woodford, Essex, July 23,

1823, he published a volume of poems in 1844, and was an assistant in the printed book dept. of the British Museum, 1846-66.

He contributed many articles to the leading reviews, and his works include *The Angel in the House*, 1854-62, his most notable poem, *The Unknown Eros*, 1877, a collection of odes, *Amelia*, 1878, and *Rod, Root and Flower*, 1895. A man of difficult temperament, egoist and mystic, he became a Roman Catholic in 1864, and died at Lympington, Nov. 26, 1896. *See* *Memoirs and Correspondence*, B. Champneys, 1900; *Life*, E. W. Gosse, 1905; *The Idea of Coventry Patmore*, O. Burdett, 1921.

Patmos, OR PATIMA. Island of Asia Minor, one of the Sporades group. Lying S.W. of Samos, on the S.E. side of the Aegean, it is famous as the place of banishment of the Apostle John. It became Greek after the Great War. Its area is 16 sq. m. Pop. 4,000. *See* Greece.

Patna. Div. and native state of



Coventry Patmore



Patmos. Above the houses is seen the monastery of S. John the Divine, built in 1088

Bihar and Orissa, India. The div. comprises the three dists. of Shahabad, Gaya, and Patna, and lies S. of the Ganges. It is crossed by the Son, and bounded W. by the United Provinces. Its area is 11,154 sq. m., and its pop. 5,635,000. The native state is one of the Orissa Feudatory States and in the S. of the prov., between the river Tel on the S.E., and Raipur and Sambalpur on the W. and N. Its area is 2,399 sq. m. and its pop. 409,000.

Patna. Dist. of Bihar and Orissa, India. It is situated S. of the Ganges and E. of the Son. Unlike most of the dists. of India, practically the whole of the cultivable area is actually under cultivation. Its area is 2,069 sq. m. Pop. 1,610,000.

Patna. Town of Bihar and Orissa, India. It is situated on the right bank of the Ganges close to the mouths of the three tributaries, Son, Gogra, Gandak. Before the days of rly. the city was a great trading centre with water transport in five directions. The remains of a pillared hall, erected by the emperor Asoka in the 3rd century B.C., were unearthed in 1912-13. The oldest mosque is that of Sher Shah (1540-45); the Patna Oriental library has a fine collection of Arabic and Persian manuscripts. Pop. 136,000.

Paton, JOHN BROWN (1830-1911). British divine. Born Dec. 17, 1830, the son of Alexander Paton,



J. B. Paton,
British divine

Newmilns, Ayrshire, he was educated at local schools. To prepare for the ministry he entered Spring Hill College, Birmingham, and while there took his degree

at London University. In 1854 he became minister of a Congregational church in Sheffield, in 1863 first principal of the Congregational Institute, Nottingham. He resigned in 1898, and died Jan. 26, 1911. Paton's many social and philanthropic activities included the founding of the National Home Reading Union. He was joint editor of *The Eclectic Review*, 1858-61. One of his sons, J. Lewis Paton, a brilliant classical scholar, was made high master of Manchester Grammar School in 1903.

Paton, SIR JOSEPH NOEL (1821-1901). Scottish painter. Born at Dunfermline, Dec. 13, 1821, he studied at Edinburgh and the R.A. schools, London. Successful in the Westminster Hall competitions of 1845 and 1847, he became A.R.S.A. in



Sir J. N. Paton,
Scottish painter

1847, and R.S.A. in 1856; and the queen's limner for Scotland in 1866. He painted religious and other subject pictures, in the pre-Raphaelite manner, with strong

but not always attractive colour. He was at his best in black and white work. Knighted, 1867, he died in Edinburgh, Dec. 26, 1901. See *Midsummer Night's Dream*, A.

Patras. Seaport of Greece. The capital of the nomarchy of Achaia, it is in the Morea or Peloponnese. Situated on the slope of a hill overlooking the Gulf of Patras, 13 m. S.W. of Lepanto, it contains several Jewish synagogues and Greek churches, one of them being traditionally associated with the martyrdom of S. Andrew. The exports include currants, wine, oil,



Patras, Greece. View of the town and harbour from the sea

woollen goods, silk, skins, valonia, lemons, citrons, honey, and pomegranates. Anciently known as Patrae, it is the only survivor of the 12 cities of Achaia. An early centre of Christianity, it was besieged by the Spaniards in 1532 and 1595. Rebuilt after its destruction by the Turks in 1821, it is now one of the principal Greek ports. There are remains of a Roman aqueduct. Pop. 52,000.

The Gulf of Patras is an inlet of the Ionian Sea, between Hellas and the Morea. It has a length of 22 m. and a max. width of 14 m. At the Strait of Lepanto, leading to the Gulf of Corinth (*q.v.*), it narrows to barely 2 m.

Patria potestas (Lat., paternal power). In Roman law, the authority of the head of the household over his own children, or those adopted by him, irrespective of age. This authority, which normally reduced the children to a condition of life-long dependence, gave the father power over their life and liberty. But it was destroyed by the thrice-repeated sale of a son, the single sale of a daughter, the adoption of a son into another gens or clan, the passing of a daughter into the legal power (*manus*) of a husband, the loss of the rights of citizenship by father or son. See *Family*.

Patriarch (Gr. *patria*, family; *archein*, to rule). Head of a family or tribe. It is specifically applied to those regarded by the Jews as the fathers of their race, to the presidents of the Sanhedrim, and,

after having been adopted by the early Church as the title of the holder of any great see, was given to the bishops of Alexandria, Rome, Antioch, Constantinople, and Jerusalem. One of the titles of the pope is Patriarch of the West; and though the patriarchates of Constantinople, Jerusalem, Antioch, and Alexandria are sees of the Greek Church, the Holy See continues to appoint bishops to them. These officials, however, except the bishop of Jerusalem, reside in Rome. The title is derived from Acts vii, 8. See *Archbishop*; *Exarch*.

Patriarchy. Form of social organization under which personal rights, duties, and restrictions are determined from the paternal side. Social anthropologists prefer the alternative term "father-right." Descent and inheritance may be reckoned along the father's line. The wife may reside with her husband's people. Child-control and choice of mate may be vested in the father. See *Family*; *Matriarchy*.

Patricia. District of Ontario, Canada. It is the most N. area in the prov., was formed from parts of Keewatin and the N.W. Territories in 1912, and named in honour of Lady Patricia Ramsay, daughter of the duke of Connaught, then governor-general. Its area is 157,400 sq. m. See *Canada*; *Ontario*.

Patrician. Member of the ruling order in ancient Rome, as opposed to the plebs or plebeians. They were the descendants of the original citizens, whereas the plebeians were the descendants of those who joined the community later. They had the monopoly of the priestly offices, had the exclusive right of interpreting the law and giving decisions, and alone were eligible for the republican magistrates, while the senate was recruited almost exclusively from their ranks.

A long and bitter struggle was waged by the plebeians (*q.v.*) to break down these privileges. This was at last successful, and from about 300 the patricians survived only as an aristocracy of birth. In

the later period of the Roman Empire the dignity was revived as a personal distinction conferred upon eminent personages. In the free cities of the Holy Roman Empire the term was applied to members of families entitled to representation on the council, and was still so used in the 19th century in the Hanseatic towns and some Swiss cantons. See *Plebeian*; *Rome*.

Patrick (c. 387-493) Patron saint of Ireland. He was born probably near Dumbarton, Scotland, at Kilpatrick, his father being a Roman named Calphurnius, his mother Conchessa being of British origin. Irish raiders carried him into servitude in Antrim at the age of 16, but, escaping, he became a monk at Tours, was ordained priest by S. Germain of Auxerre, was entrusted by Pope Celestine I with the conversion of Ireland, and went to Wicklow in 433. In spite of hostility, he made his way to Meath, and there met Laoghaire, king of Ireland, at Tara, where he baptized large numbers. He worked for seven years in Connaught and preached in the other provinces, founding numerous churches, religious houses, and bishoprics. A famous incident recorded of his early labours was the plucking of a shamrock to illustrate the doctrine of the Trinity. Croagh Patrick, at Clew Bay, and the island in Lough Derg, co. Donegal, were among his places of retreat for meditation and devotion. S. Patrick died at Saul, near Downpatrick, according to some authorities, on March 17, 493, though the year is given by the Bollandists as 460. His literary remains are the valuable Confession, preserved at Dublin, and the Letter to Coroticus. See *Lives*, Dr. J. H. Todd, 1864; J. B. Hurly, 1905.

Patricroft. Town of Lancashire, England. It is 5 m. from Manchester, with a station on the L. & N.W. Rly. The Britannia iron foundry here was established by James Nasmyth. Pop. 15,000.

Patrington. Town of Yorkshire, England. It is in the East Riding, 14 m. by rly. S.E. of Hull, and has a trade in seed, corn, and coal. In 1916 the board of agriculture acquired, for the purpose of a land settlement colony of ex-service men, an estate of 2,363 acres in the district. Pop. 1,150. See *Land Settlement*.

Patriotic Fund. General term for funds raised by public subscription for the relief of sailors and soldiers wounded in war, and their dependents. In the 19th century several such funds were started, the first being that connected with Lloyd's, 1803-20, when over



S. Patrick, the patron saint of Ireland

From an engraving by J. W. Cook

£600,000 was raised. At the time of the Crimean War the sum raised for similar purposes amounted to nearly £1,500,000. From 1880 charges of maladministration of the funds began to be made, and finally an Act, 1903, transferred all property, duties, liabilities, etc., to a body called the Royal Patriotic Fund Corporation, established in 1904. The office is at 17, Waterloo Place, S.W.

Patripassians (Lat. *pater passus*, suffering Father). Followers of an early form of the heresy known as Sabellianism (q.v.). It arose in the 2nd century, and its main contention was that God the Father became man, and died on the Cross, and that Christ, so far as He was flesh, was Son, and, so far as He was spirit or God, was the Father. Patripassianism was a development of Monarchianism (q.v.).

Patrol. Small detachment of troops or other military forces, which moves about a given area for purposes of reconnaissance or to guard against surprise. See *Cavalry*; *Outpost*.

Patron (Lat. *patronus*, from *pater*, father). Originally, a Roman citizen who had freed or manumitted a slave, the term expressing the new relation between master and freedman. The patron by the act of manumission did not lose all rights over his former slave, who owed him the obedience of a son. In addition, patron and freedman were under mutual obligations of a stringent character. From this arose the practice among the impetuous of seeking the favour of an influential man whose clients or

dependents they became, and who dependent the title of patron.

Belief in the protection of the saints brought the practice of adopting particular saints as patrons of churches, guilds etc., as well as of individuals.

Patronage. Literally, that which a patron can give, a favour of some kind. Patronage is of two chief kinds. The right to bestow benefices in the Church of England is known as patronage, whether it is exercised by bishops or laymen. Political patronage, i.e. the right to appoint persons to offices of state, is much less extensive than it was formerly, but there is still a good deal of it, practically every ruler and minister of state having some. In the United Kingdom the existing office of patronage secretary to the treasury is a reminder of its past importance. See *Benefice*; *Ecclesiastical Law*.

Patten (Fr. *patin*, clog). Wooden shoe or clog with an iron ring or thick sole to raise the foot out of the mud. They were worn in the 15th century for cleanly walking in the badly kept streets, and survived as chopines through the next two centuries. They are still worn in Lancashire and rural districts of England, and by washerwomen. See *Boots*, col. plate.

Pattenmakers' Company. THE. London city livery company. Its origin was a fellowship of clog-



Pattenmakers' Company arms

makers which flourished in the 15th century. The church of S. Margaret Patten's, Eastcheap, is said to mark the old centre of the industry. The Pattenmakers were first incorporated by charter, Aug. 2, 1670. The office is at the Guildhall, E.C. See *The Worshipful Company of Pattenmakers*, G. Lambert, 1890.

Patterson, SIR JAMES BROWN (1833-95). Australian politician. Born at Link Hall, Northumberland, Nov. 18, 1833, he was educated at Alnwick, and in 1852 went to Australia. In 1870 he was chosen a member of the state legislature, and president of the board of lands, 1875, holding office only a few months. He returned to office in 1877 as president of the same board and



Sir J. B. Patterson, Australian politician

postmaster-general, and in 1880 he became minister of railways. In 1889 he became minister of customs, being responsible for a new and increased tariff. In 1893 Patteson became premier, but he resigned in 1894, being knighted in the same year. He died Oct. 30, 1895.

Patteson, JOHN COLERIDGE (1827-71). British missionary. Born in London, April 1, 1827, the



son of Sir John Patteson, a judge, he was educated at Eton and Balliol College, Oxford. He was ordained in 1853, and in 1855 he went out as a missionary to the South Seas. In 1861 he was

made bishop of Melanesia, and, after ten years of devoted service, he was murdered, Sept. 20, 1871, on Nukupu, under the impression that he was engaged in the slave trade. See Life, C. M. Yonge, 1898.

Patti, ADELINA JUANNA MARIA (1843-1919). Anglo-Italian vocalist. Born at Madrid Feb. 19, 1843.

of Italian parentage, she made her operatic début as Lucia in 1859 in New York, where her parents, who were musicians, had gone to reside. In 1861 she sang with great success in London as Amina in La



Sonnambula, and afterwards visited the chief cities of Europe. Madame Patti was for long the most popular soprano in England, probably in the world. Her series of farewell concerts in London lasted from 1895 to 1908. She was thrice married, her third husband being a Swede, Baron Cederström. She died Sept. 27, 1919. In 1921 her residence, Craig-y-Nos Castle, near Swansea, was bought for a Welsh national memorial. Buried first in England, her body was exhumed and interred in Père Lachaise, Paris. See The Reign of Patti, H. Klein, 1920.

Pattison, DOROTHY WYNDLOW (1832-78). British philanthropist, known as Sister Dora. Born at Hauxwell, Yorkshire, Jan. 16, 1832, she was a daughter of the rector here and the youngest sister of Mark Pattison. In 1864 she

joined the sisterhood of the Good Samaritan at Coatham, and in 1865 took charge of a hospital conducted by that community at Walsall. In 1877, during an epidemic of small-pox, she became super-



Pau, France. View from the left bank of the Gave, showing the 14th century castle

intendent of the Walsall municipal hospital. She died Dec. 24, 1878. A statue was erected in Walsall to her memory. See Sister Dora, M. Lonsdale, 1880.

Pattison, MARK (1813-84). British scholar. Born Oct. 10, 1813, at Hornby, Yorkshire, the son of a clergyman, he was educated by his father and at Oriel College, Oxford. Brought up a strict Evangelical, he fell under the influence of Newman, but subsequently his theological views took a distinctly broad direction. In 1839 he was elected a fellow of Lincoln College, where as tutor and lecturer he exercised great influence and won a high reputation. He was ordained in 1841. In 1855 he resigned his tutorship, and the next few years were passed partly in Germany. In 1861 he returned to Oxford as rector of Lincoln, and there remained until his death at Harrogate, July 30, 1884. His widow, Emilia Francis Strong, became the wife of Sir C. W. Dilke (q.v.).



Mark Pattison, British scholar

Pattison wrote much for reviews and the like, but his special field of study was the history of classical learning from the time of the Renaissance. He wrote a Life of Casaubon, but never completed that of Scaliger. He also wrote a Life of Milton, 1879. He contributed to Essays and Reviews (q.v.). His Memoirs, published posthumously in 1885, are almost painful in their frankness; in them he is sometimes hard and bitter towards others, and always hard on himself. A scholar in the real sense, he was one of the most notable personages in the Oxford of his day. He is said to have been the original of Isaac

Casaubon in Middlemarch. See Recollections of Pattison, Hon. I. A. Tollemache, 1891.

Pau. Town of France. The capital of the dept. of Basses Pyrénées, it stands on the right

bank of the Gave du Pau, 66 m. from Bayonne. The chief building is the castle, built in the 14th century by Gaston Phoebus, count of Foix; later it was enlarged, and it was restored by Louis Philippe, although part is still a ruin. It has a noted collection of tapestries. Other buildings include the hôtel de ville, an old Jesuit college, and a museum. In the Place Royale is a statue of Henry IV. Standing at a height of 670 ft., with a delightful climate, Pau is a favourite winter resort. It was the residence of the counts of Foix, while from 1512-89 it was the capital of the little state of Béarn. Henry IV and Bernadotte were born here. Pop. 37,000.

Pau, PAUL MARIE CÉSAR GERALD (b. 1848). French soldier. He was born at Montélimar, Nov. 29, 1848, and educated at St. Cyr. Entering the French army as a lieutenant of infantry, he served in the Franco-Prussian War, 1870-71, where he lost an arm. He reached the rank of general



P. M. C. G. Pau, French soldier

in 1897, and commanded a division in 1903. Later he was in command of the 16th army corps, and then of the 20th army corps. Shortly after the outbreak of the Great War he was given general direction of the French offensive in Alsace. In 1918 he was a member of the French trade mission to Australia, visiting also New Zealand and Canada.

Pauillac. Town and seaport of France. In the dept. of Gironde, it stands on the left bank of the Gironde, 29 m. N.W. of Bordeaux. It has a harbour used by vessels unable to ascend to Bordeaux, and is the centre of a vine-growing district. Pop. 6,000.

Paul. Urban diast. of Cornwall, England. It is 2 m. from Penzance. The chief building is the church of S. Paul and the main industry is fishing. The Spaniards burned the village in 1593. In the neighbourhood are remains of a British camp. Pop. 6,000

Paul. Masculine Christian name. Of Roman origin, it is a contraction of Paucillus, and means small. It became popular throughout Christendom because borne by S. Paul. The form Paulus is sometimes used; Paula, Pauline, Paulina, and Paulette are feminine.

PAUL: SAINT AND APOSTLE

Rev. James Stalker, D.D., Author, *The Life of S. Paul*

This article is one of a series of biographies of the Christian saints, e.g. Andrew, Peter, and others. See also Christianity; Jesus Christ; the article Acts of the Apostles, and those on S. Paul's Epistles, e.g. Galatians

Paul, the apostle of Jesus Christ, was born at Tarsus, in Cilicia, about the same time as Jesus Christ was born in Judea. His name was originally Saul, and the change is mentioned in the middle of his first missionary journey without any explanation being given. He was a Jew of the Dispersion, and the contrast of Jew and Gentile formed the background of all his thinking. His birthplace was a considerable city, with extensive transit trade, and it specialised in the manufacture of a kind of haircloth, named after the province and used in making tents. Paul learned the trade of tent-making, and the possession of this handicraft played a part subsequently in his life as a missionary. Tarsus was, besides, a university city, and from this circumstance Paul obtained a tincture of Greek literature, as well as a contempt for pedantry.

Though, however, in Paul's eyes Tarsus was "no mean city," the city of his heart was elsewhere. He was brought up "an Hebrew of the Hebrews"; and it was entirely in harmony with his deepest aspirations when he was sent to Jerusalem to learn to be a rabbi. He was brought up there "at the feet of Gamaliel," but did not absorb the tolerant spirit of that scholar. Jesus had just been crucified, and the Christian religion had started on its career. The young rabbi was among the first opponents of the new sect, colliding with Stephen and its other champions; and he headed a persecution intended to suppress it altogether. But on the way to Damascus, where he was going to hunt out the Christians, he was converted, by a vision of the Crucified, to the faith which he was attempting to destroy, and he immediately testified in Damascus that Jesus was the Christ.

So sudden and complete a revolution demanded from a mind like his time for reflection; and there followed three years spent by him in Arabia, thinking out the full import of his experience.

Paul had never been satisfied with his own religion, and his dissatisfaction with it had reached a crisis at the very time of the incident at Damascus. The Jewish law had produced in him, not holiness, but the sense of sin, his conscience growing more and more troubled; the death of Jesus for sin not only satisfied his conscience, but awoke deathless gratitude to Him who was the author of so great salvation. He longed to make known the discovery to all men. Through faith and love he felt himself one with Christ; and Christ seemed to continue to act and suffer in his own personality.



Saint Paul the Apostle. From the painting by Rubens
Prado Gallery, Madrid

These ideas, especially justification by faith, union with Christ, and the universality of the Gospel, became the watchwords of his life, and, though the emphasis laid by him on one or another varied according to circumstances, he never lost his faith in them or his enthusiasm for proclaiming them.

Missionary Journeys

On leaving Arabia, Paul went to Jerusalem; but the disciples were afraid of the persecutor turned apostle, till Barnabas won for him their confidence; and then

he began to preach with power. The opposition of the Jews was too strong, however, and he had to be sent away to Tarsus, where he spent not a few years, of which there is scarcely any record, in evangelising his native province. It was Barnabas, when his own work at Antioch was so successful as to demand additional help, who brought him again into the stream of the Christian movement, and it was in company with this friend that he was sent forth from Antioch, now become a second Jerusalem, on his first missionary journey. This tour described a kind of circle round Cilicia, and so was a continuation of his earlier labours. It was attended with astonishing difficulties, but no less astonishing success. His second missionary journey was by far the most adventurous and influential; as he carried the Gospel into Europe and evangelised the cities of Greece, among them Athens and Corinth. The third journey went over the same ground, but its principal centre was Ephesus, which had been passed by in the second journey.

Imprisonment at Caesarea

Paul's aspiration now was to preach the Gospel at Rome, and this hope was to be fulfilled, although in a way he little anticipated. On arriving in Jerusalem at the end of his third journey, he was arrested at the instance of the Jews; in danger of being surrendered to his enemies, he appealed to Caesar, and so had to be sent to Rome for trial before the emperor. On the way thither he suffered a long imprisonment at Caesarea, and at Rome his trial did not come on for two years. But in prison he kept up ceaseless communication with the Churches he had founded all over the empire. He sent them letters, now known as his Epistles, and received letters from them; their office-bearers were sent to visit him, and his disciples and helpers visited them; he was pinning all the time to be at large and engaged in his beloved work again. It has been questioned whether this desire was gratified, but the probability is strong that it was. Not only is there the unanimous testimony of antiquity to this effect, but three Epistles of his—the two to Timothy and the one to Titus—appear to belong to the period after his first imprisonment at Rome, and these contain notices of visits of his to such places as Ephesus and Crete.

In the second Epistle to Timothy he is in prison at Rome, expecting, not release, but the speedy ending of his course. At Three Fountains,

a spot a little south of Rome, the scene of his beheading is shown; and in the near neighbourhood the splendid church of S. Paul-outside-the-Walls is a memorial to his influence. But this is far more amply secured in other ways. Among both the thinkers and the workers of the world he occupies a lofty place, and he has been called the second founder of Christianity.

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Paul. Name of five popes. Paul I succeeded his brother Stephen II in May, 757. He associated himself with the Frankish king Pepin, and entered into friendly relations with the emperor of the East. He died June 28, 767.

Paul II (1417-71). Pope from 1464-71. A Venetian and the nephew of Eugenius IV, Pietro Barbo abandoned a secular career on the elevation of his uncle to the papal throne (1431). He was created cardinal in 1440, and was elected pope in succession to Pius II.



Paul II,
Pope 1464-71

II. As Paul II he instituted the carnival at Rome, built the palace now known as the Palazzo di Venezia, and was a patron of the arts. He died July 26, 1471.

Paul III (1468-1549). Pope from 1534-49. Born Feb. 29, 1468, of an ancient Roman family, Alessandro Farnese studied first at Rome and afterwards at Florence, where his association with the court of the Medici laid the foundations of his career. He was made cardinal in 1493 by Alexander VI, and increased in favour under successive popes. On his election to the papacy he was bishop of Ostia.



Paul III,
Pope 1534-49

The pontificate of Paul III coincided with the movement known as the Counter-Reformation.

He afforded material assistance to the emperor in his struggle against the Protestant princes of the Schmalkalden League, but Charles V's methods of compromise created a breach between them which was never healed. The general council met at Trent in December, 1545, but an outbreak of the plague led to its adjournment to Bologna, and subsequently, as a result of the emperor's demand for its return to German territory, the pope indefinitely suspended its meetings. Paul III died Nov. 10, 1549.

Paul IV (1476-1559). Pope from 1555-59. Born near Benevento, June 28, 1476, a member of



Paul IV,
Pope 1555-59

the Caraffa family, Giovanni Pietro was ordained, and in 1524 resigned his benefices to enter a religious order founded by S. Cajetan. Picked out by Paul III for the work of reform, Caraffa was in 1536 made cardinal, and afterwards archbishop of Naples. He was elected pope in his 80th year. The chief feature of Paul IV's pontificate was an implacable opposition to Spain, which prompted his war with Philip II, his alliance with France, and the enrichment of his worthless nephews with possessions taken from the Colonna family, who supported the Spanish interest. He reorganized the Inquisition, before which he caused to be summoned even eminent clerics, on the bare suspicion of heresy. Paul IV died Aug. 18, 1559.

Paul V (1552-1621). Pope from 1605-21. Born at Rome, Sept. 17, 1552, Camillo, a member of the noble Borghese family, studied law at Perugia and Padua. He was created cardinal by Clement VIII in 1596, and elected pope in succession to Leo XI.



Paul V,
Pope 1605-21

The chief event of his reign was his quarrel with Venice. In England the pope forbade Catholic subjects to take the oath of allegiance demanded by James I. Paul V died Jan. 28, 1621. See Life, T. A. Trollope, 1861; History of the Papacy, M. Creighton, 1903; His-

tory of the Popes, L.v. Pastor, Eng. trans. F. I. Antrobus, 1891-1912.

Paul I (1754-1801). Tsar of Russia. He was born Oct. 1, 1754, the son of Catherine the Great and Peter III, who had such an aversion for him that he refused to acknowledge him. After the murder of Peter, in 1762, Catherine seized the throne, and Paul led an



Paul I,
Tsar of Russia

obscure existence until her death. Paul began his reign by banishing the counsellors of Catherine. He joined the allied powers against Napoleon, and later entered into an alliance with Napoleon in order to crush the Bourbons. On March 23, 1801, he was assassinated.

Paul of SAMOSATA. Third century heretic. Born at Samosata, on the Euphrates, he was appointed bishop of Antioch about 260. He was condemned for heresy by the council of Antioch in 264, and was deposed from his bishopric five years later. But the influence of Zenobia of Palmyra maintained him in his position till 272. He taught that the Word was not made flesh, but merely manifested Itself in Christ without making Him divine. In his view, the Trinity was merely a triple form of manifestation of God.

Paul et Virginie. Story by Bernardin de Saint-Pierre. It was first published in 1789 as one of his Studies of Nature. The scene is laid in the island of Mauritius, and



Paul et Virginie, the lovers in the romance by Bernardin de Saint-Pierre

From a painting by P. A. Col

the story is of the great affection of the hero and heroine—some-what conventionalised “children of nature.” The tragic tale is one of the classics of sentimentalism.

Paulet or Poulett. Famous English family, the heads of which are the marquess of Winchester and Earl Poulett. Its earliest members came apparently from the village of Pawlett, near Bridgewater, and one of them, Sir Amyas Poulett, was knighted in 1487. A later Sir Amyas was at one time gaoler of Mary Queen of Scots, and others were noted soldiers. Several members of the family married heiresses, one of these being a certain William Paulet, who lived about 1400. His son, Sir John Paulet, secured in like fashion the historic domain on which Basing House was built, and his son, Sir William Paulet, served Henry VIII and his three children in several of the highest offices of state. In 1551 Sir William Paulet was made marquess of Winchester, and in 1689 the 5th marquess was created duke of Bolton. The latter title became extinct when the 6th duke died in 1794, but the marquessate passed to another branch of the Paulets who still hold it.

The other title still in this family is that of Earl Poulett. In 1627 John Poulett, a descendant of Sir Amyas, was made Lord Poulett of Hinton. He was a stout royalist, as was his son, the 2nd lord. John, the 4th lord, was made Earl Poulett in 1706, and in 1710–11 was first lord of the treasury and nominally the head of a Tory ministry. Early in the 20th century a dispute over the succession to this earldom led to a *cause célèbre* in the courts. Earl Poulett's son is known as Viscount Hinton, and the family estate of Hinton St. George, in Somerset, is one of its oldest possessions. The two branches of the family have adopted different spellings of the same name. See Winchester, Marquess of.

Paulicians. Heretical sect which arose in Syria about 660, under the teaching of Constantine of Mananalis, who assumed the name of Sylvanus. They are variously said to have been named after S. Paul, whose teaching they professed to follow, and after a certain Paul who is said to have preached Manichaean doctrines in Armenia. While they repudiated the alleged apostleship of Mani, they adopted his doctrines of the essential evil of matter and the dualistic origin of the universe. They denied the inspiration of the O.T., and rejected the doctrine of the Atonement. They also repudiated the sacraments.



Paulownia. Leaves and cluster of tubular flowers

The Paulicians were constantly persecuted from the 7th till the middle of the 9th century, when they leagued themselves with the Saracens and revolted against the emperor. Finally they were defeated, but continued to give trouble; and early in the 10th century they became powerful in Bulgaria, where their teaching had spread widely. At the close of the 11th century they were scattered by Alexius Comnenus. There are said to be a few lingering remnants of the sect in the Danubian Provinces, and in Armenia, at the present time. See *The Key of Truth*, F. C. Conybeare, 1898.

Paulinus. English prelate. Born in Rome, he became a monk, and in 601 was one of those sent to England by Pope Gregory I to assist S. Augustine. After working in Kent he went in 625 to Northumbria. In 627 he baptized the Northumbrian king Edwin, and became the first bishop of York. After the death of Edwin in 633, he returned to Kent and became bishop of Rochester.

Paulinus, GAIUS SUETONIUS (fl. 41–69). Roman general. In A.D. 41 he suppressed a revolt in Mauritania, thus extending the Roman power to the base of the Atlas Mountains. In 59 he was appointed governor of Britain, and two years later subdued Anglesey, the stronghold of Druidism. Summoned south to quell the Iceni, who had rebelled under the leadership of their queen, Boadicea (*q.v.*), Paulinus gained a decisive victory over them near London. The following year he was recalled to Rome, and in 66 was consul. After the death of Galba, he served under Otho, and in 69 was defeated by Vitellius. There is no record of his ultimate fate.

Paulistas. Descendants of the first Portuguese settlers in Brazil. Settled mostly round São Paulo, whence their name, they formed a vigorous and progressive race who opposed with equal energy Indians,

Spaniards, and Jesuit missionaries, and successfully opened the country for Portugal as far as the Andes.

Paulownia (*Paulownia imperialis*). Tree of the natural order Scrophulariaceae. It is a native of Japan. It has large opposite, downy leaves, and tubular, violet flowers with darker spots, in elongated clusters at the ends of the shoots.

Paul Pry. Character of a three-act comedy of the same name by John Poole, produced at the Haymarket Theatre, London, Sept. 13, 1825. An inquisitive



Paul Pry, the character as acted by John Liston

After O. Clint, A.R.A.

gossip, he tries to learn all about other people's business by eavesdropping or appearing with the half apologetic “I hope I don't intrude,” which came to be a catch phrase. The creator of the part was Liston, and

later it was often played by J. L. Toole. Paul Pry is also the title of a two-act comedy by Douglas Jerrold, produced at the Coburg Theatre, Nov. 27, 1828. The original of the character is said to have been Thomas Hill, an old eccentric well known in the early 19th century.

Paulus, LUCIUS (OR MARCUS) AEMILIUS. Roman general. Consul, 219 B.C., he was awarded the honour of a triumph for his victory over Demetrius of Pharos, an Illyrian general who had carried on piratical expeditions in forbidden waters, contrary to treaty conditions. Again consul in 216, he lost his life at the battle of Cannae, which was fought against his advice, refusing to leave the field after the defeat of the Romans.

Paulus, LUCIUS AEMILIUS (c. 229–160 B.C.). Roman general. The son of Lucius Aemilius Paulus (d. 216), he received the surname of Macedonicus from his defeat of Perseus, the last king of Macedonia, at Pydna in 168 B.C. He was one of the best types of the old republican nobility. “It was his son who was adopted into the family of Scipio, and became known as Scipio Africanus Minor.

Paulus Diaconus OR PAUL THE DEACON. Medieval historian. By birth a Lombard, he was born about 725, and became a member of the court of the Lombard king. Later he entered a monastery, and became a deacon, dying before 800

at Monte Cassino, a Benedictine abbey where he had lived for some time. He was known to Charlemagne, and was one of those who helped in the 8th century revival of learning. The reputation of Paulus rests on his History of the Lombards. A Latin chronicle, it tells the story of the Lombards down to 747, and about the relations between the Franks and the Lombards is the most valuable authority extant. Other writers continued it. It was first printed in 1514, and has been translated into English and other languages.

Pauncefote, JULIAN PAUNCEFOTE, BARON (1828-1902). British diplomatist. Born in Munich,



Baron Pauncefote,
British diplomatist.
Elliott & Fry

Sept. 13, 1828, he was educated at Marlborough and abroad, became a barrister, and after practising in London was attorney-general of Hong Kong, 1865-72. He was

then chief justice of the Leeward Islands, returning to England to become under-secretary at the colonial office. In 1876 he was transferred to the foreign office, and became its permanent under-secretary in 1882. In 1889 he was sent to the U.S.A. as minister, and he remained there until his death. He had much to do with settling the Bering Sea fishing dispute, with the question of the Venezuelan boundary, and with the attempts at an arbitration treaty. He represented Britain at the first Hague Conference, and did much to establish the court of arbitration there. In 1893 he was given the rank of ambassador, and in 1899 was made a peer. He died at Washington, May 24, 1902, when the title became extinct.

Pauperism (Lat. *pauper*, a poor person). State of dependence upon the community through lack of the ordinary means of subsistence.

In ancient Greece the maintenance of the poor was a matter of state concern, and in the early days of the Roman republic stringent legislation attempted to limit personal wealth within reasonable bounds. The sale of grain to the populace at low prices, and, at last, its free distribution, marked the decadence of the state, and assisted its downfall.

Feudalism involved the dependence of the serf upon his lord for maintenance, and the Church became throughout the Middle Ages the greatest almsgiver by the

channel of rich religious houses. When these fell, the poor as well as education suffered from the blow. But long before this event vagabondage had been a crying evil in England. Repressive measures were tried in vain. In 1349 the giving of alms to able-bodied vagrants was made punishable by imprisonment. In 1388 some provision was made for the helpless poor. Compulsory contributions for their support (by way of "voluntary" gifts) commenced in 1535, the duty of relief and of finding work for the able-bodied being put upon every parish, while the "sturdy beggar" had no mercy shown him.

The law of 1601, which forms the basis of the English poor-law system, taxed every inhabitant of a parish for the relief of the poor, and instituted the appointment of overseers by the justices. As time went on, abuses crept into the operation of this Act, and various attempts were made to amend it, notably in 1723, when the workhouse system was favoured. Outdoor relief was again general by the end of the 18th century, and the burden on the rates became intolerable, amounting in 1820 to well over £7,000,000. In 1832 a commission was appointed to make full inquiry into the working of the existing law, and its report, which condemned the crying abuse of outdoor relief, and censured the workhouse administration, resulted in the Poor Law Amendment Act of 1834. This effected important changes in administration, which resulted in a large decrease in the numbers applying for relief, i.e. under strict workhouse discipline, and also reduced the expenditure on poor relief by one-third within three years.

Able-bodied paupers are relieved in the workhouse, where they must do some work in return for food and lodging. They must also be employed in no other way, thus checking the old evil of relief in aid of wages, which after the Napoleonic Wars frequently involved the anomaly that the pauper was better off than the ordinary labourer who was in employment. Special provision is made for the sick and infirm, and children, as well as for pauper lunatics. In Scotland and Ireland similar but separate systems of relief are in force, though in Scotland no relief is given to able-bodied adults. U.S.A. practice is also based on the great Act of 1601. See Poor Law; Settlement.

Pausanias. Spartan general. After the death of his father Cleombrotus (480 B.C.), he acted as regent

for Pleistarchus, the son of Leonidas, and hence is sometimes erroneously called king of Sparta. In 479 he was appointed to the command of the combined Greek force which defeated the Persians at Plataea (q.v.). He then captured Byzantium, whence the Persians threatened the Aegean Sea, but, impressed with the magnificence of the Persian empire, Pausanias made overtures to Xerxes, offering to assist him in the subjugation of Greece, and asking the hand of his daughter. Xerxes received his overtures favourably, and Pausanias began to treat the representatives of the allied states with such arrogance that they transferred their allegiance from Sparta to Athens.

Meanwhile suspicion had been aroused, Pausanias was recalled to Sparta, and twice stood his trial for treason. He was acquitted on each occasion, but an intercepted letter to the Persian monarch placed his guilt beyond doubt. After an unsuccessful attempt to provoke a Helot revolt, Pausanias took refuge in a temple, which was walled up with a view to starving him to death. At the last moment, in order that the sacred place might not be polluted by his death, he was brought out of the temple, and expired, c. 471.

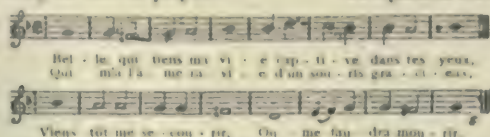
Pausanias (c. A.D. 150). Greek traveller and geographer. Perhaps a native of Lydia, he travelled extensively in Greece, embodying the results of his journeys in a work in 10 volumes, *The Itinerary of Greece*. It is a gazetteer of Greece, in which the author chronicles what he has seen with his own eyes, with observations on points of historical, antiquarian, mythological, or artistic interest. His work is written chiefly from a religious point of view, which explains his attitude towards the monuments of ancient art, temples and shrines receiving special attention. Modern research largely confirms the accuracy of the *Itinerary*. Pausanias travelled also in Egypt, Syria, Palestine, and Italy. There are translations by A. R. Shilleto, 1886, and J. G. Frazer, 1898, and one in the Loeb Classical Library, 1918.

Pause. In music, a sign placed over a note or rest to indicate that it is to be sustained *ad libitum* beyond its written value. It is also used for a rest.



Pavane (Ital. *pavano*, from Lat. *pavo*, peacock). Stately dance tune in duple time, joining with the galliard in the earliest kind of suite. One of the oldest on record is given in Arbeau's *Orchésographie*, with words, as follows, for the pavane.

like other dances, was originally sung as well as played:



Thomas Morley, in *A Plaine and Easie Introduction to Practicall Musicke*, 1597, wrote of the Pavane as "a kind of staide musicke, ordained for grave dauncing . . . everie straine is plaide or sung twice. A straine they make to contain 8, 12, or 16 semibreves as they list, yet fewer than eight I have not scene in any pavan. . . . After everie pavan we usually set a galliard." See Suite.

Pavement. Floor of any hard material, such as marble; also the prepared covering of a road or footway, or any other surface subjected to traffic. It is, however, more usually restricted in meaning to street pavements.

Pavia. Prov. of N. Italy, in Lombardy. It is bounded N. by Milan, N.W. by Novara, W. by Alessandria, E. by Piacenza, and S. by Genoa. Mountainous in the S., it stretches N.W. from the Ligurian Apennines to the valley of the river Po. Fertile tracts in the N. and centre are watered by the Ticino, Sesia, and other tributaries of the Po. There are many canals, the chief linking up the Ticino with the Olona. Area, 1,287 sq. m. Pop. 514,500.

Pavia. City of Italy. The capital of the prov. of Pavia, it is the ancient Ticinum. It stands on the left bank of the Ticino, near its junction with the Po, 22 m. by rly. S. of Milan. A magnificent 14th century covered bridge spans the river, connecting with the suburb of Ticino. The cathedral was founded in 1487 and the façade finished in 1898. S. Michele, one of the finest specimens of the Lombard basilica, dates from the 11th century. In it some of the medieval emperors were crowned kings of the Lombards. The original church, which was in existence as early as 661, was burned down in 1004; its successor was restored in 1863-76.

The university is a handsome building, dating from 1490, but Pavia was a centre of learning as early as the 9th century. Attached to the modern edifice is a well-stocked library and a botanical garden. The Palazzo Malaspina houses a collection of paintings, engravings, and historical relics. The Castello, built by Galeazzo Visconti about 1360, is a huge quadrangular structure with arcades, which formerly contained a

priceless collection of armour and antiquarian relics; it was looted by the French in 1500, and is now used as a barracks. Near by is the Certosa di Pavia. Manufactures are unim-

portant, but there is trade in silk, wine, olives and olive oil, corn, hemp, and Parmesan cheese. Pop. 40,000.

Founded by Gauls, Pavia was the capital of the kingdom of the Lombards until 774, when it was captured by Charlemagne. It fell into the hands of the Visconti in the 14th century, and thereafter shared in the fortunes of Milan. It was sacked three times by the French, and occupied by Austria in 1706, 1746, and 1814, in whose possession it remained until 1859, when it became Italian. See Certosa.

Pavia, BATTLE OF. Victory of Charles V over the French, 1525. After a protracted siege of the city of Pavia by Francis I of France, an imperial army was collected for its relief and the battle opened without the city walls, Feb. 24, 1525. The day was going in favour of the French when their Swiss mercenaries deserted in a body. Troops emerged from the city and took the French in the rear, and after a bloody contest the latter were routed with a loss of 10,000 men, Francis himself being taken prisoner. The battle ended the French invasion of Italy.

Pavilion. Word derived indirectly from Lat. *papilio* (butterfly) and used at first for a tent of a rather elaborate kind. It was given to the temporary erections at tournaments and festivities, e.g. at the Field of the Cloth of Gold. To-day it is chiefly used for a building attached to a recreation ground.

Paving. Word used in two senses, one as a synonym of pavement and the other for the materials

for a pavement. Paving existed certainly 2000 B.C., and there are constant references to the paving of Roman and other ancient cities. The Romans used stone, mortar, and cement in layers. Lava was a favourite stone in Pompeii. Cobble stones were a general form of paving until the 19th century, when the use of granite, asphalt, wood, and other materials gradually spread. See Roads.

Paviors' OR PAVIERS' COMPANY, THE. London city livery company. Referred to in *Styve's Stow*, ed. 1755, as "no doubt a company of antiquity," but without any record of incorporation, and by Maitland in 1739 as a company by prescription, this guild was reconstructed in 1889.



Paviors' Company arms

The office is at 62, London Wall, E.C. See *An Account of the . . . Paviors*, C. Welch, 1909.

Pavlograd. Town of central Russia. It is in the govt., and 40 m. N.E., of Ekaterinoslav, on the river Volcha, and the Kursk-Sevastopol rly. Here are numerous flour mills, tobacco and brick works, and considerable trade in



Pavia, Italy. Part of nave and pulpit of the cathedral; top, right, façade of the church of S. Michele

grain and cattle. It is a Cossack settlement. Pop. 40,000.

Pavlova, ANNA. Russian dancer. Born in Russia, she made her first appearance at the Imperial Opera House, St. Petersburg, and soon became the most noted dancer in Europe. She made her debut in London, in 1909, at the Palace

Theatre. After performing in London for a number of years she toured in America and returned to England, where she made her home at Hampstead. She resumed her performances in London in 1921.

Pavlovo. Town of central Russia. It is in the govt. of Nijni-Novgorod, on the river Oka. It is one of the most important industrial centres of Russia, and is called the Russian Sheffield. There are factories of locks, knives, and all kinds of ironware, also important soapworks. Pop. 20,000.

Pavlovsk. Town of Central Russia. It is in the govt., and 90 m. S.E., of Voronezh, and stands near the junction of the Don and the Osseveda. The making of soap, candles, and bricks are the chief industries, and it has a trade in cattle, cereals, and tallow. Pop. 8,000.

Pavlovsk. Town of N.W. Russia. In the govt., and 18 m. S., of Petrograd, with which it is connected by rly., it is on the river Slavyanka. It is surrounded by a park, adorned with Greek temples, and was a favourite summer resort of well-to-do Petrograd citizens. The château contains a valuable collection of Roman art treasures. Pop. 8,400.

Pavo or Peacock. In astronomy, one of the ancient southern constellations named by Bayer. It possesses several double stars, notably Zeta Pavoris.

Pawnbroker. Person licensed to lend money at interest on the security of articles deposited with him. The origin of pawnbroking may be traced to very early times, both in Europe and in Asia. In Christendom, however, the practice was philanthropic in character, rather than commercial, since the *mont de piété* was originally an Italian institution, supported by the popes, and based on loans to the poor, free of interest. Various attempts were made, the earliest in 1361, to introduce this benevolent system into other countries, but in the end interest was everywhere charged by pawnbrokers, though the rates had to be strictly controlled by legislation.

Pawnbroking and banking often went together, and in England, in the reign of Edward I, certain Italian traders gained a foothold on or near the site of Lombard Street. The origin of the three golden balls as the pawnbroker's sign is doubtful; it is at any rate improbable that, as one story goes, they are derived from the arms of the Medici, though that family gained much power by profitable loan transactions with needy potentates. The Lombards enjoyed their monopoly of pawnbroking until exorbitant charges



Anna Pavlova, the Russian dancer, in characteristic Russian head-dress

brought their expulsion in the reign of Elizabeth, and the first year of her successor brought the first controlling legislation. Further regulating Acts were passed in 1756, 1783, 1800, 1856, 1859, and 1860, and these were consolidated in the Act of 1872, on which the existing law is based.

On small loans of £10 and under, the rates of interest are fixed; on sums of 10s. and under, the pawnbroker's charge is $\frac{1}{4}$ d. for the ticket, and interest at $\frac{1}{4}$ d. per calendar month on each florin or part of a florin; between 10s. and 40s., the charges are 1d. for the ticket, and $\frac{1}{4}$ d. a month per florin; while on larger sums up to £10 the charge for the ticket is 1d., and the interest $\frac{1}{4}$ d. per half-crown. Special contracts, however, may be made with loans exceeding 40s.

Every pawnbroker must take out an annual licence at a cost of £7 10s., with an additional charge of £5 15s. for permission to deal in plate. He must also display his rates of interest, and keep his books in good order. The Act also sets out certain things which the pawnbroker must not do, e.g. take an article in pawn from an intoxicated person.

Pledges may be redeemed at any time within one year and seven days, on production of the pawn-ticket and payment of the loan and accrued interest. Articles unredeemed within the specified term, if of less value than 10s., become the absolute property of the pawnbroker; if worth more than 10s., they may be retained on pledge, or sold by public auction. Full records of all articles sold must be kept for three years for inspection on demand by the holder of the

ticket, who may also demand from the pawnbroker, within the same period, any sum received from the sale in excess of the charges due, and the expenses of the sale. If the sale results in a deficit, the pawnbroker may sue for the difference.

Pawnbrokers are liable in certain circumstances for loss by fire, or damage to pledges in their possession. They also have to exercise great caution with regard to goods which may have been stolen. If they accept goods knowing them to have been stolen, they are punishable as receivers; if they have acted in good faith, and the articles are proved to be stolen property, it is their duty to assist the police to the best of their power. See Banking; Mont de Piété.

Pawnee. Confederacy of North American Indian tribes, formerly in Nebraska. Taking part in the Caddoan migration from the S.W., they came into contact with the Algonquins, who enslaved their captives, and in the 17th century bartered them to the white colonists. Hence Pawnee came to denote any aboriginal slave. In 1906 they numbered, in Oklahoma, 649.

Pawtucket. City of Rhode Island, U.S.A., in Providence co. It stands at the head of navigation on both banks of the Pawtucket river, 4 m. N. of Providence, and on the New York, New Haven, and Hartford Rly. Pawtucket Falls, 50 ft. high, provide considerable water power. Samuel Slater established here in 1790 the first cotton factory in the U.S.A. The city is noted for its textile manufactures of all materials and varieties, and there are many dyeing, bleaching, and finishing works. Dating from 1765, the city grew by reason of changes in administrative boundaries, 1828-1874, and received its charter in 1886. Pop. 64,200.

Paxiüba Palm (*Iriartea venetricosa*) OR ZANONA PALM. Tall tree of the natural order Palmae. It is a native of the Amazons and



Paxiüba Palm. Head of leaves; inset: left, fruit; right, aerial roots

Guiana. The trunk, which attains a height of 60 to 100 ft., has a considerable bulge in girth about half way up, and throws out aerial roots about six feet from the ground. The leaves are 12 to 20 ft. long, divided into two rows of leaflets.

Paxo or **PAXOS.** Smallest of the seven chief Ionian Islands, Greece. With dimensions 5 m. by 2 m., and a rocky surface, it produces fruits and olive oil. The capital is Gaïos, on the E. coast. Pop. 4,000.

Pax Romana (Roman peace). Term applied to the condition of the Roman empire from the accession of Nerva, A.D. 98, to the death of Marcus Aurelius, A.D. 180. This period was one of profound peace. The analogous phrase Pax Britannica has come into use to denote the peace maintained in those parts of the world which are under British protection.

Paxton, Sir JOSEPH (1801-65). British architect and gardener. Born at Milton Bryant, Bedfordshire, Aug. 3, 1801, the son of a small farmer, he was appointed superintendent of the gardens at Chatsworth in 1826. He



Sir Joseph Paxton,
British architect

After Oakley

built the conservatory and fountains, the first being the model for the Crystal Palace of 1851. His plans for the exhibition having been approved, he was knighted in 1851. He represented Coventry in Parliament from 1854 until his death at Sydenham, June 8, 1865.

Pay Day. On Stock Exchange, the last day of the settlement. Thereon stocks and shares taken up must be paid for, or the buyer will be treated as a defaulter.

Paymaster. Non-combatant rank of officer in the navy and army. In the navy the grades range from assistant paymaster (under four years' standing), corresponding to sub-lieutenant, to the paymaster-in-chief, who has equivalent rank to executive captain. They may be distinguished by the white edging to the gold cuff stripe or stripes. See Army Pay Department.

Paymaster-General. Government official in charge of a small department which pays out public money in accordance with the votes of Parliament and as requisitioned by the Treasury. He is a member of the Government, but not of the Cabinet, and is unpaid. He was first appointed after 1660, and perquisites and commissions long made his office perhaps the

most lucrative in the public service. In 1835 the office was reorganized and is now of secondary importance. See Treasury.

Payment of Members. Term used for the payment of salaries to members of a legislature. The payment of members' expenses in England dates from very early times, and was at first defrayed by the constituencies, but it lapsed during the Stuart period, when a seat in the House began to be regarded as a privilege. In the British House of Commons, after a long agitation, a payment of £400 a year was sanctioned by the House, Aug. 11, 1911. In 1921 some M.P.'s endeavoured to obtain parliamentary sanction for the exemption of their salaries from income tax, and to receive free railway travel during the session. At that time the effort was unsuccessful, but in 1924 first-class railway passes were sanctioned.

The British Dominions have adopted the payment of members. Those of the Canadian House of Commons receive the allowance of 4,000 dollars (£800) for the session, with a deduction of 25 dollars a day for every day beyond 15, if the member does not attend. Members of the N.S. Wales legislative assembly receive £500 a year, with free rail and tram travel, and are provided with official stamped envelopes for the transmission of correspondence. Those of the Victoria assembly receive a reimbursement of £500 for expenses, free postage and travel. In Queensland M.P.'s receive £300 per annum, free postage and stationery; in S. Australia £200 per annum and free rly. travel; in Western Australia £400 per annum and free rly. travel. Most of the leading foreign countries have adopted payment of members. In France the salary is £600 a year, with a deduction for absences.

Payn, JAMES (1830-98). British novelist. He was born at Cheltenham, Feb. 28, 1830, and educated at Eton, afterwards spending a year at the Royal Military Academy at Woolwich. An article describing life at Woolwich, which was accepted by Household Words, was his first introduction to literature, to which, after four years at Trinity College, Cambridge, Payn resolved to devote himself. He edited Chambers's Jour-



James Payn
Ellis & Walery

nal 1858-74, and also the Cornhill Magazine, 1882-96. His works include What He Cost Her, 1877; By Proxy, 1878; Thicker than Water, 1883; The Talk of the Town, 1885, which deals with the Shakespearean forger Ireland. Some Literary Recollections, 1884, contains interesting reminiscences of contemporary literary society, and The Backwater of Life, published posthumously in 1899, some cultured essays. He died in London, March 25, 1898.

Payne, JOHN HOWARD (1791-1852). American actor and playwright. Born in New York, he



made his stage debut at the Park Theatre there, Feb. 24, 1809, as Young Norval in John Home's tragedy, Douglas. He acted in England, adapted

from the French, was U.S. consul at Tunis, 1842-45 and 1851-52, and died there, April 9, 1852. He is chiefly remembered as author of Home, Sweet Home (q.v.). See Lives, C. H. Brainard, 1885; W. T. Hanson, 1913.

Paysandú. Department of W. Uruguay. It is situated E. of the Uruguay river, which separates it from the Argentine provs. of Entre Rios and Corrientes. It is rich in minerals, yielding gold, silver, copper, and iron, and sheep and cattle are reared. Area, 5,115 sq. m. Pop. 61,000.

Paysandú, the capital, stands on the E. bank of the Uruguay river, 170 m. N. of Buenos Aires and 282 m. by rly. N.W. of Montevideo. A modern town, with fine public buildings, it has large abattoirs, and carries on a trade in livestock, etc. The town was founded in 1772. Pop. 22,000.

Pays d'État. Term used to describe those provinces of France which, before the Revolution, had certain local privileges. Their estates retained some of their earlier powers, chiefly that of voting their own taxes. Languedoc, Brittany, Burgundy, Provence, and Artois were the chief pays d'état, and there were some smaller districts of like nature, most of them on the frontiers. All provinces which were not pays d'état were called pays d'élection. In these the government was completely centralised. See France.

Payta. Seaport of N. Peru, in the dept. of Piura. It exports cotton; cotton-seed, goat skins,

and hides. The port is specially equipped for traffic in petroleum. There is a short railway to Piura, the capital of the dept. Pop. 4,000.

P.C. Abbrev. for privy council, or councillor; police constable; perpetual curate; postcard.

Pea (*Pisum sativum*). Annual climbing herb of the natural order Leguminosae. Its seeds and pods

are edible, and form one of the most popular of vegetables. The origin of the garden pea is unknown, but it is said to have been introduced into Britain from S. Europe in 1548. The seed should be sown monthly from Feb. to May or June, in a deep rich soil with a little lime added. The use of stable manure, except in very small quantities, is not recommended for edible peas, as it has a tendency to make the plants pro-



Pea. Pods of green pea, showing method of splitting

By courtesy of Sutton & Sons

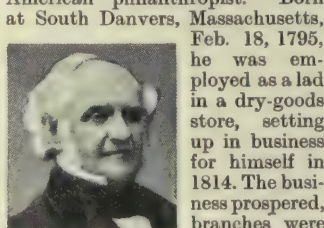
duce much stem and leaf, but only indifferant pods. The best dressing is a dusting of nitrate of soda when the young plants are about 1 ft. in height.

The seeds of the pea should be planted fairly thickly, say one pint to 200 ft. in length of border, and it is a good plan, before sowing, to roll the peas in red lead, as this helps to protect them from the ravages of birds and mice. They should be sown about 3 or 4 ins. deep and 1 in. apart diagonally, for the dwarf kinds, and at a greater distance for the taller sorts, while the rows should be from 18 ins. apart for the dwarf kinds and from 4 to 6 ft. apart, according to height, for the taller growing varieties. The plants may be trained upon brushwood, known as pea-sticks, or across horizontally stretched wires or strings. Dwarf peas need no training, but are apt to get spoiled by violent rains. The variety known as sugar pea has edible pods. See Fruit.

Peabody. City of Massachusetts, U.S.A., in Essex co. It is 2 m. W. of Salem, and is served by the Boston and Maine Rly. It contains the Peabody Institute, with a fine library and a high school. An important industrial town, its chief manufactures are leather, boots

and shoes, gloves, electrical appliances, cotton goods, and soap. Formerly known as South Danvers, it assumed its present name in 1868 in honour of George Peabody, born here in 1795. It became a city in 1917. Pop. 19,600.

Peabody, GEORGE (1795-1869). American philanthropist. Born



George Peabody, American philanthropist

at South Danvers, Massachusetts, Feb. 18, 1795, he was employed as a lad in a dry-goods store, setting up in business for himself in 1814. The business prospered, branches were opened in New York and Philadelphia, and in 1837 Peabody came to London, where, retiring from the American business in 1843, he set up as a merchant and banker. The large fortune he had amassed in America he employed in philanthropic work. In England he gave £150,000 for the London poor, and £500,000 to establish the Peabody dwellings. He died in London, Nov. 4, 1869, and after lying in state in Westminster Abbey, his remains were taken to America.

Peabody Trust. Fund established in 1862 by George Peabody, who gave or left a total sum of £500,000 to trustees to build houses for the working classes of London. Blocks of buildings were erected in various parts of London until there were 18 of them. By the end of 1918 the Trust owned dwellings with 15,939 rooms, in which 22,392 persons lived. The average weekly charge for each room was 2s. 4½d., this including water and the use of laundries and sculleries.

Peace (Lat. *pax*). State of quiet, the opposite of warfare. The word is also used as a synonym for a treaty, e.g. the peace of Westphalia. In early times, by the proclamation of a truce of God, down to modern days, by the setting up of a League of Nations, attempts have been made to create or perpetuate a state of peace between nations. These have taken the form of agreements for the submission of disputes to arbitration, and conferences such as those held at The Hague, and of other ways, while peace societies have been established in Great Britain, the U.S.A., and other countries. See Arbitration, International; League of Nations; Treaty; War.

Peace. River of Canada. Rising W. of the Rockies in the mountains of British Columbia, it passes through the Rockies and

flows mainly N. and N.E. through the N. of Alberta. Just N. of Lake Athabaska it joins the Slave, and the united stream empties itself into the Great Slave Lake. Its length is 1,067 m. and its chief tributaries are the Finlay, Smoky, Little Smoky, and Parsnip. Its basin covers 117,000 sq. m. The Peace River district in Alberta is very rich in minerals, especially coal. The river is navigable beyond Dunvegan except for 2 m. near Vermilion Falls.

Peace, CHARLES (1832-79). British criminal. Born in Sheffield, May 14, 1832, he received his first sentence for robbery in 1851. In 1854 he was sentenced to four years' penal servitude for burglary, and afterwards always worked alone for fear of betrayal. Peace had a remarkable power of disguise. The loss of two fingers of one hand suggested to him the use of a false arm with a hook, an identity mark which he put on and off at pleasure.

On Nov. 29, 1876, Peace committed at Bannercross, near Sheffield, the murder for which he was hanged. At large after a term of penal servitude, he was living, under his own name, next door to an engineer named Arthur Dyson. Bad blood arose between the two men over Mrs. Dyson, and Peace shot Dyson. He then disappeared, and, under the name of John Ward, started a career of burglary in the London suburbs, living in a large house in Peckham, and passing as a rich man of the highest respectability.

One early morning in 1878, a policeman named Robinson came across Peace at work in the grounds of a large house on St. John's Hill. Though Peace shot and wounded him severely, the burglar was secured. He gave his name as John Ward, and under that name was convicted at the Old Bailey, Nov. 19, of attempting the life of a policeman, and sent to penal servitude for life. The woman with whom Peace had been living, however, betrayed him, and he was tried at Leeds winter assizes for the murder of Dyson, and sentenced to death. Before his execution he confessed to many burglaries and at least one murder, that of Constable Cock at Manchester in 1876. For this crime a man named William Habron had been convicted and sentenced to death, and was actually suffering penal servitude for life at the moment of Peace's confession. He received a free pardon and £800 compensation. Peace was hanged at Leeds, Feb. 25, 1879.

Peace Conference. Meeting of representatives of belligerents following hostilities to settle territorial and other questions. A peace conference usually follows an armistice, but where one nation completely defeats another terms of peace may be dictated without a conference.

The term is specially associated with the meeting of Allied powers in Paris, 1919, which drew up the various peace treaties following the Great War. It was formally opened on Jan. 18, and 27 nations were represented, but the chief deliberations were conducted by five Great Powers—Great Britain, France, United States, Japan, and Italy. At first two representatives of each, constituting the council of ten, carried on the main work, but this was soon reduced to four, Japan dropping out. The main deliberations were conducted by the "Big Four"—Lloyd George, Clemenceau, Wilson, and Orlando, various drafting committees and commissions working simultaneously. The peace terms were presented to Germany on May 7, and signed June 28; those to Austria were presented June 2, and signed Sept. 10; Bulgaria signed on Nov. 27. See Neuilly; St. Germain; Sévres; Trianon; Versailles, Treaty of; consult also A History of the Peace Conference of Paris, ed. H. W. V. Temperley, 1921.

Peaceful Penetration. Term applied to methods of obtaining political influence, particularly among backward races, by means of trade. It was used with specific reference to Germany in the years preceding the Great War. In a wider sense the term implies similar methods of commercial aggressiveness in all foreign markets. Germany was particularly successful in this international competition, largely owing to her wide system of credits, adaptability to the varied needs of her foreign customers, and willingness to do business at a lower margin of profit than most of her rivals for the world's commerce.

Peace Society. Association for the prevention of war. There are some hundreds of them throughout the world, one having been established in England in 1816. The offices are at 47, New Broad Street, London, E.C. In 1843 the various peace societies held an international congress at Brussels, this being the first of a number of such meetings. See Arbitration, International; Hague Conference.

Peach (*Prunus Persica*). Small fruit-bearing tree of the natural order Rosaceae. It is a native of Asia, was cultivated before the

Christian era, and was introduced into Britain in the 16th century. The flowers are pink, white, and red, and the fruit, in the case of the peach itself, is large, pale yellow and crimson in colour, and smooth skinned. The nectarine, a variety, is much smaller in size.

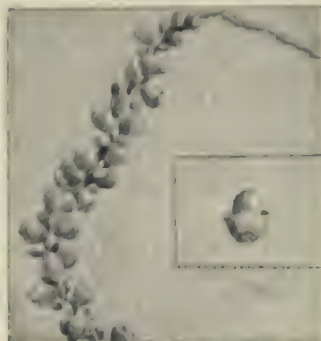
There are two types of peaches, known as freestone and cling-stone. In the former the flesh parts readily from the stone, but in the latter, fibrous cords from the stone hold the flesh around it. In Great Britain out-of-door peaches will thrive in favoured situa-



Peach. Flowers and, top, fruit and section

tions on walls with a S. or S.W. aspect. The fan-shaped trees should be planted about 15 ft. apart, in well-drained turfy loam, with a little lime added. If the walls are not trellised or wired, the branches must be trained by means of shreds. Peaches require plenty of water in the summer time, and protection by means of cloths from winter frosts. Red spider is the principal pest. Under glass, peaches should be started in pots in a temperature ranging between 45° and 60°, between Jan. and March. The potting mixture should consist of loam, crushed bones, and well-rotted manure, and the trees should be watered freely during spring and summer. Pruning should be rather drastically performed when the shoots are about 2 ins. long. The fruit itself should be thinned when it is about the size of a grape. Propagation is by seeds or grafting. There is a double-flowered peach (*Persica vulgaris flore pleno*) which is grown as an ornamental shrub, for the sake of its blossoms, in sunny borders. It thrives in any ordinary soil, and has white flowers.

Peach Palm (*Bactris minor*). Tall slender tree of the natural order Palmae. It is a native of the



Peach Palm. Spray of fruit of *Bactris gaspensis*; inset, single fruit

Amazon region. The trunk is armed with sharp spines, and the leaves are from 2 to 4 ft. long, divided into two rows of slender leaflets a foot long. The egg-shaped, peach-like, scarlet and orange fruit is produced in large bunches.

Peacock (*Pavo*). Genus of the pheasant family. The common peacock (*P. cristatus*) is a native of India and Ceylon. It was introduced into Europe at an early date, and was a favourite table bird with the Romans and down to the medieval period. Its flesh resembles that of the pheasant, and its eggs are excellent, but it is now kept for ornamental purposes only.

The peacock is one of the handsomest of birds, especially at the breeding season, when the male displays his gorgeously eyed train for the delectation of the hens. This train is not the tail, but a prolongation of the upper tail-cover feathers, and when spread may be seen to be supported by the true tail feathers. The peacock breeds readily in captivity.

The green or Java peacock (*P. muticus*) is a native of Burma, Malay Peninsula, and Java, and is about the same size as the common peacock, but with a more brilliant plumage. See Bird, colour plate.

Peacock, SIR ALEXANDER JAMES (b. 1861). Australian politician. Elected to the Victoria legislative assembly in 1889, he became minister of education and postmaster-general in 1892. He was chief secretary and minister of education, 1894; minister of labour, 1900; and premier and treasurer, 1901-2. In 1907-8 he became chief secretary, was minister of education and labour, 1913-14; and premier, treasurer, and minister of labour, 1914-17. He was created K.C.M.G. in 1902.

Peacock, THOMAS LOVE (1785-1866). British poet and novelist. Born at Weymouth, Oct. 18, 1785,

he left school early to enter business in London, but studied much in his leisure and acquired a good knowledge of the classics. In 1812 he met Shelley, and was closely associated with him for some years. In 1819 he entered the service of the East India Company and proved a most capable official. The best of his poems is *Rhododaphne*,



T. Love Peacock,
British author

1818, which shows the influence of Shelley, but he deserves to be remembered rather for his satiric novels, such as *Headlong Hall*, 1816; *Nightmare*

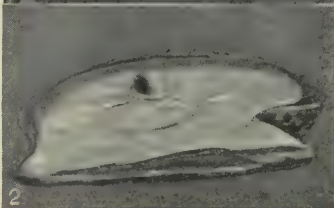
Abbey, 1818; *Maid Marian*, 1822; and *Crotchet Castle*, 1831. He died at Halliford, near Chertsey, Jan. 23, 1866. One of his daughters married George Meredith (q.v.). See *Works*, with *Memoirs*, ed. H. Cole, 1875, and R. Garnett, 1891; *Life*, C. van Daren, 1911; T. L. P., A. M. Freeman, 1911.

Peacock Blue. Greenish-blue tint found in the peacock's plumage, and reproduced as a composite colour in the painter's palette. It is the dominant note in Whistler's famous decoration of the Peacock Room at Prince's Gate, London.

Peak. Wild tableland of Derbyshire, England. It is in the N.W. of the county, forming the S. end of the Pennine Chain. Its highest point is Kinder Scout (2,088 ft.), other heights being Axe Edge, near Buxton (1,860 ft.), and Mam Tor (1,700 ft.). Castleton is regarded as the capital of the Peak, and Chatsworth is known as the palace of the Peak. Peveril Castle, near Castleton, figures in Scott's *Peveril of the Peak*. The Peak has no very definite limits, although it may be described as the district N. of Buxton. It is a wild, moorland area, watered by a number of streams that feed the Derwent. On it are stone quarries, and grouse are shot on the moors. Peak Forest is a station on the Mid. Rly., 36 m. from Derby. The Peak Cavern is a cave at Castleton, which goes 500 yards into the limestone.

Pea Nut (*Arachis hypogaea*). Herb of the natural order Leguminosae, better known as the ground nut (q.v.) or monkey nut.

Pear (*Pyrus communis*). Tree of the natural order Rosaceae. It is a native of Britain, and from E. Europe to the Himalayas. The soil in which the pear thrives best is a deep, rich loam, free from clay subsoil. When once established pears



Pearl. 1. Opening shells to find pearls. 2. Shell containing a fine pearl, found off Turtle Island, 1909. 3. Cluster of Japanese pearl oysters

liberally repay a weekly dose of solution of nitrate of soda during the summer months. They are propagated in the same way as apples, chiefly by grafting, but the best stock to employ is the quince (q.v.), except for standards.

Late pears should never be left on the trees after the middle of November, but picked and carefully stored



in a well-aired room, on wooden shelves, care being taken that one fruit does not touch another. They may be artificially ripened when desired by placing

Pear. Fruit of a cultivated variety. Top, left, British wild pear

them on a sunny shelf in a heated greenhouse. The pear, particularly in an uncooked state, should be avoided by persons with a tendency to biliousness. Pears are grown in the S. and W. of England for the manufacture of perry, a mildly alcoholic beverage prepared in the same way as is cider from apples. See *Perry*.

Pearl. Secretion deposited by many bivalve molluscs, oysters and mussels, and a few univalves, in the form of a

great number of thin layers of calcium carbonate, one upon the other. Whether found as oval, spherical, or irregularly shaped independent objects, as "blisters" attached to the shells, or as the smooth, inner lining of the shells, called mother-of-pearl, the main composition is identical, though in some instances special colouring matter is present. The beautiful iridescent play of colour, pearly lustre or "orient," is due to irregular refraction caused by obstruction to light by the numerous thin layers. Pearls of fine shape are formed within the mantle, or fleshy substance, of the mollusc, while irregularly shaped pearls and blisters are formed between the fish and the shell or even on the shell itself.

Pearls dissolve in acids, discolour if exposed to alkali, or even to constant warmth against human skin. They are light in weight and comparatively soft, the degree of hardness being between 3 and 4.

The best pearls are produced by the pearl oyster (*Meleagrina margaritifera*), which also is the principal source of mother-of-pearl, and another kind, *M. fucata*. These yield white, yellowish white, bluish white, reddish, grey, and black pearls. The finest blacks, which are much esteemed, come from the South Seas and the Gulf of Mexico. The hammer oysters of the Gambier Islands yield bronze tinted pearls. Pale rose coloured pearls with velvety lines come from the Bahamas. Garnet red, pale and dark brown ones are obtained from the fan mussel (*Pinna nobilis*), blue from the edible mussel, violet from the ark shell (*Arca Noae*), and purple from the *Ammia cepa*.

In the trade pearls are known as pear, bell, or drop, according to their shape; those of irregular form are known as buttons, fancy, blisters or baroques. Paragons are of the size of small walnuts; cherries, of cherry stones; seed, shot, and dust are the smallest.

Imitation pearls are fashioned out of mother-of-pearl, but are easily detected, as the layers are not concentric. The finest imitation pearls are made on a principle discovered by Jacquin, of Paris, in 1680. He used hollow beads of colourless glass, coated with a mixture of gelatin and the tiny silvery scales of the bleak (*g.u.*), and filled with wax to give solidity.

"Cultured" pearls are produced by introducing into the flesh of the oyster, usually under the liver, a foreign substance which the oyster covers with "nacre." The Japanese have long been the chief agents in this branch of the pearl industry. In 1921 considerable discussion arose as to the propriety of putting on the market these cultured pearls as natural ones.

Most pearl fisheries are found within the tropic seas. Those giving yields of the greatest importance are the oyster beds of the Persian Gulf, the Red Sea, Ceylon, Queensland and W. Australia. The last three regions are strictly preserved. Fishing is also carried on in the waters of California, several points on the S. American coast, among the Pacific island shallows, and in several of the Chinese estuaries, the latter probably furnishing pearls from mussels. Fishing is generally undertaken by divers from boats, armed with knives and bags attached to belts round their waists to contain the oyster shells. In other instances baskets are lowered and hauled up by ropes. Many fishers wear diving dresses, which enable them to remain longer in deep water. In



Pearl Fruit. Flower-bearing branch of the small shrub. Inset, left, leaf; right, fruit

Australia, dredging is also adopted. See Australia; Bahrain Islands.

Bibliography. The Great Barrier Reef of Australia: Its Products and Potentialities. W. Saville-Kent, 1893; Report on the Pearl Oyster Fisheries of the Gulf of Manaar, W. A. Herdman, 1903; Book of the Pearl, G. F. Kunz and C. H. Stevenson, 1908; Pearls, W. J. Dakin, 1913.

Pearl. English poem of the 14th century. It was written about 1370, probably in Cheshire or Lancashire, by the unknown author of Sir Gawayne and the Green Knight, Cleanthes, and Patience, perhaps, after Chaucer, the greatest Middle English poet. Pearl, written in 101 stanzas of 12 lines, tells how the author, grieving at the death of his infant daughter, whom he calls his pearl, sees her in a vision as a grown maiden standing on the farther bank of a river. She comforts and instructs him, and finally shows him the New Jerusalem, where she walks among the virgins who follow the Lamb. See editions by I. Gollancz, 1891; C. G. Osgood, 1906; Pearl rendered into Modern English, C. G. Osgood, 1907.

Pearl. River of Mississippi, U.S.A. Rising in Winston co., it follows a winding course of 295 m. to the Rigoleta, a channel communicating between lakes Borgne and Pontchartrain. It drains an area of 7,250 sq. m. and is navigable for small craft for about one-third of its length, while larger vessels reach Gainesville.

Pearl. Group of islands in the Bay of Panama, Central America, belonging to the republic of Panama. The largest are San Miguel, Del Rey, San José, and Pedro Gonzales, and there are numerous islets. They were so named from the pearl fisheries, which are actively prosecuted.

Pearl. Type, half the size of long primer, a size larger than ruby and a size smaller than diamond. Known also as 5 point, about 15 lines make an inch in depth. It is called both *Parisiens* and *Seda-*

noise in French, *Perl* in German, *jody* and *pearl* in Dutch, and *occhia di mosca* in Italian.

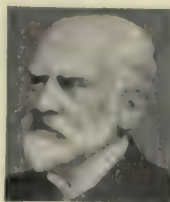
Pearl Ash OR POTASH. Crude, impure potassium carbonate. It is obtained by burning waste wood. The United States, Russia and Spain are the chief producers of this form of potash, and a revival has taken place in the manufacture consequent upon the dislocation of the supply from the European potash mines. Pearl ash is used in the manufacture of flint glass and soap.

Pearl Fruit (*Margaricarpus setosus*) Small shrub of the natural order Rosaceae. It is a native of the Andes. The alternate leaves are broken up into awl-shaped leaflets. The inconspicuous, small green flowers are produced at the base of the leaves, and are succeeded by minute pearly fruits.

Pearlite. Constituent of steel, an intimate mixture of ferrite and cementite. It was first described by H. C. Sorby, who called it the pearly constituent of steel. It may be either granular or lamellar in structure, and, if the latter, the lamellae may be alternately hard and soft. It is characteristic of steel which has cooled slowly from a high temperature. See Steel.

Pearl Powder. Crystalline form of calcium sulphate employed in paper making for hardening the surface of paper. It is also known as pearl hardener. A powder made from fish scales, used for giving the effect of pearl to celluloid and xylonite, is known commercially as pearl powder. The term is also used for a cosmetic consisting of bismuth oxychloride.

Pears, Sir Edwin (1835-1919). British lawyer. Born in York, he became secretary to Frederick



Sir Edwin Pears,
British lawyer
Hiltett & Fry

the British press. He made his home there, practising in the consular courts and studying Byzantine archaeology, on which he was a leading authority. Knighted in 1909, he died in Malta, Nov. 27, 1919, after an accident on board ship from Constantinople to England. He was the author of *Turkey and Its People*, 1911, and wrote much on the Near East

Pearson, CHARLES HENRY (1830-94). British historian. Born in London, Sept. 7, 1830, he was edu-



Charles H. Pearson,
British historian

cated at Rugby, King's College, London, and Exeter College, Oxford. He became, in 1855, lecturer and then professor of history at King's College, resigning in 1865. He wrote for the press and travelled, and for two years lectured at Trinity College, Cambridge, before 1871, when he went to Australia, where he lectured at the university of Melbourne. In 1875 he entered the legislature of Victoria, and from 1886-90 was minister of education, carrying out very important reforms. Pearson's great work was his *National Life and Character*, 1893, pessimistic as regards the future of the white man. Earlier, his *Early and Middle Ages of England*, 1861, had aroused controversy. He died in London, May 29, 1894. See *Autobiography*, 1900.

Pearson, SIR CYRIL ARTHUR (1866-1921). British newspaper proprietor. Born Feb. 24, 1866, at Wookey, Somersetshire, son of the Rev. A. Cyril Pearson, he was educated at Winchester. He began journalism as sub-editor of *Tit-Bits*, founded Pearson's *Weekly* in 1890, *Home*

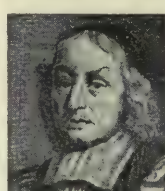


Sir C. A. Pearson,
British newspaper
proprietor

Notes in 1894, *Pearson's Magazine* in 1896, and *The Daily Express* (q.v.) in 1900. Later he acquired a controlling interest in *The St. James's Gazette* and in several papers in Birmingham, Newcastle, and Leicester. In Nov., 1904, he acquired *The Standard* and *The Evening Standard*, and amalgamated with the last named *The St. James's Gazette*. Overtaken by blindness, he retired from journalism in 1912 and devoted himself to the welfare of those similarly afflicted, especially of soldiers and sailors, organizing *St. Dunstan's Hostel* (q.v.). He was made a baronet in 1916 and a G.B.E. in 1917. He wrote *Victory over Blindness*, 1919, and contributed the article on the training of the blind to this *Encyclopedia*. He died Dec. 9, 1921.

Pearson, JOHN (1613-86). English divine. He was born at Great Snoring, Norfolk, Feb. 28, 1613,

and educated at Eton and King's College, Cambridge, of which he became a fellow. In 1640 he was



John Pearson,
English divine

appointed rector of Thorington. In 1654 he became weekly preacher at St. Clement's, Eastcheap, London, and there delivered the sermons which in 1659 he published under the title of *An Exposition of the Creed*. This scholarly work (see ed. by Sinkler, 1882) is a classic of Anglican divinity. In 1660 Pearson became master of Jesus College, Cambridge, in 1661 Lady Margaret professor of divinity, in 1662 master of Trinity College, and in 1673 bishop of Chester, where he died July 16, 1686.

Pearson, KARL (b. 1857). British scientist. Educated at University College School, London, and King's College, Cambridge, he was called to the bar at the Inner Temple, 1882. His interests, however, were in the direction of scientific inquiry, and he studied the theories of evolution and heredity, especially from the mathematical standpoint. He became professor of eugenics and director of the laboratory of national eugenics in the university of London. Pearson's writings include *The Chances of Death and other Studies in Evolution*, 1897; *Tables for Statisticians*, 1914; *The Life and Letters of Francis Galton*, 1914.

Peary, ROBERT EDWIN (1856-1920). American explorer. Born May 6, 1856, he entered the U.S. navy as a civil engineer in 1881, and was employed in the survey of the proposed Nicaragua Ship Canal. Arctic exploration had long been his study when in 1891-92 he carried out a sledging expedition of 1,300 m. from McCormick Bay to the N.E. coast of Greenland. Other voyages followed between 1893-97; in 1898 he surveyed and charted the coast N. of Greenland, and in 1902 and 1905 he made attempts to reach the Pole. In 1908 he began the voyage which led to the discovery of the N. Pole, April 6, 1909. Promoted rear-admiral, 1911, he died at Washington, Feb. 19, 1920. See *Arctic Exploration*; Cook, F. A.; consult also *North Pole*, R. E. Peary, 1910.



R. E. Peary,
American explorer

Peary Land. Desolate ice-bound tract of N. Greenland. It was discovered by Lockwood and Brainard in 1882. The neighbouring fiords were explored in Rasmussen's second Thule expedition, 1916-17. It was named after Peary, the explorer, who spent a considerable period in surveying this region.

Peasantry (Fr. *paysan*, from Lat. *pagensis*, countryman). General term for the rural population of a country labouring on the land for wages, or holding and tilling small plots of land for themselves. See *Allotment*; *Labourer*; *Métayer System*; *Small-holdings*.

Peasants' Revolt. Rising of the peasantry in England in 1381. There was at this time much discontent due to the enactment of the statute of labourers, a consequence of the Black Death, and to other causes. The imposition of a poll-tax brought matters to a head. On May 30 there was an outbreak at Brentwood. On June 2 a more serious movement began. In Kent Wat Tyler, supported by John Ball, appeared as its leader.

Maidstone and Dartford were centres of disorder, while Essex and other eastern counties were also in revolt. Manor houses and manor rolls were destroyed, lawyers singled out for vengeance. The Kentish and Essex rebels marched to London, burned the prisons and other buildings in Southwark, crossed London Bridge, and murdered Simon of Sudbury, archbishop of Canterbury, and the treasurer, Sir Robert Hales. At Mile End Richard II met them and persuaded some of them to go home. Next day, June 15, there was another meeting at Smithfield, where Tyler was stabbed by the lord mayor, but Richard quieted his followers, who dispersed on the strength of his promise that their grievances should be removed. This, however, was not kept. Meanwhile, the Norfolk rebels had been crushed at N. Walsham by the bishop of Norwich. See *England: History*; Tyler, W.; consult also *Rising in E. Anglia* in 1381, E. Powell, 1895; *The Great Revolt of 1381*, C. Oman, 1906.

Peasants' War. Rising of the peasantry which took place in Germany in 1522-25. Due mainly to economic causes, it broke out in the Black Forest area. The rising, however, spread to Franconia, and was especially successful in Thuringia. Roused to action, the princes collected an army, and, led by Philip of Hesse, defeated the Thuringian rebels at Frankenhäusen in May, 1535, their leader, Thomas Münzer, being killed. See *Germany: History*.

Pease. Name of a family famous in the industrial life of N. England. The first to attain wealth



Sir Joseph Pease,
British politician

Elliott & Fry

and position was Joseph Pease, a woolen manufacturer at Darlington about 1760. His son, Edward (1767-1858), helped George Stephenson in his rly. enterprises and became

connected with the coal, iron, banking, and other industries in and around Darlington. His sons, Joseph and Henry, were both members of Parliament, Joseph being the first Quaker to sit therein. Of the next generation the most prominent members were Sir Joseph Whitwell Pease (1828-1903), created a baronet in 1882, and his brother, Arthur. Both sat in Parliament, as did their sons.

Sir Joseph's elder son, Sir Alfred E. Pease, was a great hunter and sportsman, and the younger, Joseph Albert, filled several offices in the Liberal government and was made Lord Gainford in 1916. Arthur's son, Herbert Pike Pease, held office on the Unionist side, and later in Lloyd George's coalition government. The earlier Peases were Quakers and strong advocates of peace, of the abolition of slavery, and other philanthropic objects. Many of their industrial interests were amalgamated in the firm of Pease & Partners, Ltd.

Peasehall Mystery. British *cause célèbre*. In the early morning of June 1, 1902, Rose Harsent, a domestic servant at Peasehall, near Saxmundham, Suffolk, was found lying in the kitchen of the house where she was employed, with her throat cut. On her was found a letter making an appointment for 12 o'clock the previous night. This letter was declared by one expert to have been written by a married man living in the same village, who was arrested. The case against him was mainly circumstantial, but his wife declared that he had not left her during the whole time which covered the murder. After four days' trial the jury disagreed on Nov. 11, 1902. He was tried again in 1903, and again the jury disagreed. On Jan. 29, 1903, the crown issued a *nolle prosequi*, and the accused man was discharged. The trial was memorable for Sir Ernest Wild's defence.

Peat. Spongy substance of vegetable origin common to almost every temperate country. The larger part of British peat appears

to be composed of mosses, hill peat being mainly sphagnum and andromeda, while lowland is principally hypnum moss. The formation of peat depends upon a particular combination of climatic and topographical condi-



Peat obtained from Somerset peat bogs. Cutting the peat and, top right, method of stacking

tions. There must be a soil which will retain water at or near the surface, a sufficiently low temperature to prevent rapid evaporation, a temperature not too low to prevent the growth of vegetation, yet low enough to check too rapid a decay. The average temperature best suited for the formation of peat ranges from 42°-48° F.

The process which converts plant substances into peat is similar to that which has formed the coal measures, but the oldest peat deposits are, geologically speaking, modern compared with coal. Peat bogs cover an area of about 6,000,000 acres in the British Isles, Ireland alone possessing 3,000,000 acres. They vary greatly in depth, in Ireland rarely exceeding 20 ft., while in parts of Wales and on Dartmoor the deposits are as much as 40 ft. deep.

Pure peat, thoroughly dry, contains from 49 to 64 p.c. of carbon, and has a calorific value rather more than half that of a similar weight of black coal. The top stratum of a peat bog has little value as fuel, but is suitable for the manufacture of moss litter, paper pulp, and textile fabrics. The next layer is light in colour, and not comparable with the dark peat obtained two feet or more below the surface. Mountain peat is considered superior to lowland peat. Peat is cut with a long, narrow, very sharp shovel. Freshly cut, it contains as much as 80 p.c.

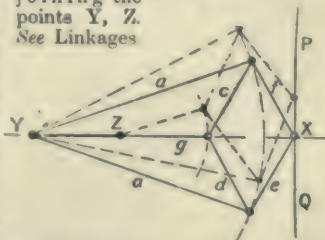


of water. The turves or sods are stacked edge-wise, leaning one against another, and dried by sun and air. The sods must be turned every other day, and the drying process is completed within ten to twelve days. Cutting takes place not later than June.

See Humogen; consult also Peat and its Products, W. A. Kerr, 1905; Peat and its Manufacture, Björling and Gissing, 1907.

Peaucellier Cell. Mechanism comprising a series of pivoted links, invented by the French Lieut. C. N. Peaucellier, in 1864, to produce motion in a straight line. It consists of a pair of links (a) of equal length, pivoted together at one end (Y), and at their other ends connected with opposite angles of four links (c, d, e, f) forming a rhombus. Pivoted to the links (c, d) is a further link (g), the end (Z) of which is located halfway between the point (Y) and the junction of the links (c, d). When in use the mechanism oscillates about fixed points Y and Z, and the point X, forming the junction of the links e, f, travels along a straight line P, Q at right angles to a line joining the points Y, Z.

See Linkages



Peaucellier Cell. Diagram demonstrating the principle of the mechanism. The dotted lines show how the point X moves up or down on the vertical line. See text

Pebrine OR MUSCARDINE. Disease affecting silkworms. It was formerly ascribed to the attack of a fungus, but is now known to be caused by a microscopic single-celled protozoan (*Nosema bombycis*). The disease manifests itself by the appearance of dark spots on the skin, the larva becomes languid and stunted, with defective appetite. Most die in the larval stage, but a few contrive to spin a loose cocoon and pupate. If moths emerge from the pupae they are feeble, and their eggs transmit the disease to the next generation. The disease, which is both contagious and infectious, and has at times been epidemic in the silk-producing districts of France and Italy, can only be combated by killing the sick insects. It is prevented by cultivating the larvae out of doors on netted trees. It is estimated that before Pasteur established its true nature, the disease involved the French silk industry in a loss of £40,000,000.

Pecan (*Carya illoensis*). Alternative name for the American hickory nut (*q.v.*).

Peccary (*Dicotyles*). Genus of ungulate mammals with only three toes on the hind foot. They



Peccary. The collared peccary, a tailless mammal of America

are natives of America from Paraguay to Arkansas and Texas. Although much resembling small pigs in appearance and gregarious habits, they have no tails. The bones above the foot unite to form a cannon-bone. The most familiar species is the collared peccary (*D. torquatus*).

Pe-chih-li. Variant names of the Chinese gulf and province of Chih-li (*q.v.*).

Peckforton Castle. Seat of Baron Tollemache, at Tarporley, Cheshire, England. It was built

1844-50. Near by is Beeston Castle, built by the earl of Chester in 1220, and dismantled 1646.

Peckham.

Dist. of London. Part of the met. bor. of Camberwell, S.E., it lies N. of Peckham Rye and Nunhead and W. of New Cross and Hatcham. Peckham Road, Peckham High Street, and Queen's Road (once Deptford Lane) connect Church Street, Camberwell, with New Cross. In Peckham Road are Camberwell town hall, central library, the S. London Art Gallery and Technical Institute, and Camden Chapel. The Licensed Victuallers' Asylum and the works of the S. Metropolitan Gas Co. are in the vicinity. Peckham, which cherishes legends of King John and Nell Gwynn, and memories of Oliver Goldsmith and Robert Browning, is mentioned in Domesday under the name of Pecheham, but has altered considerably in modern times. Peckham Rye, 64 acres, a public recreation ground from time immemorial, has been definitely public property since 1882. Peckham Rye Park, over 42 acres, opened in 1894 and since added to, has an old farmhouse and is beautifully wooded.

Pecksniff, SETH. Character in Dickens's novel *Martin Chuzzlewit*. An architect and land surveyor who made his apprentices do all his work, he exudes goodness, piety, and benevolence. He is the recognized personification of unctuous hypocrisy.

Pecock, REGINALD (c. 1395-1460). Bishop of Chichester. He was educated at Oxford, where he became fellow of Oriel College, and in 1431 he was appointed master of Whittington College, London. He became bishop of St. Asaph in 1444, and was translated to Chichester six years later. He engaged in bitter controversy against the Lollards, preaching against church reform at Paul's Cross, and his utterances brought him into such disrepute that his books were publicly burnt, his name was



Peckham, London. The Rye, looking south-east

removed from the privy council, and he was compelled to recant publicly and resign his bishopric in 1458. His later days were spent in retirement at Thorney Abbey. See *Life*, J. Lewis, new ed. 1820.

Pecos. River of U.S.A. Rising in the N.E. part of New Mexico, it flows first S.E. and then S. into Texas along the W. scarp of the Llano. There it again assumes a S.E. course, finally entering the



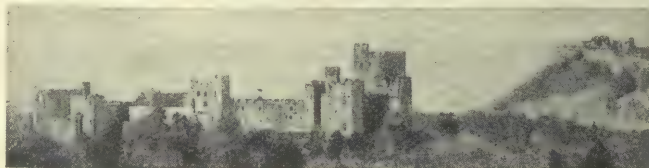
Seth Pecksniff, the hypocritical architect and impostor of Dickens's novel *Martin Chuzzlewit*

From a drawing by Fred Barnard.

Rio Grande, about 37 m. N.W. of Del Rio. It is 800 m. long, but is of little commercial value apart from irrigation. At Hondo and Carlsbad are two of the irrigation projects of the U.S. National Reclamation Service.

Pécs. Town of S. Hungary known as Fünfkirchen (*q.v.*). See N.V.

Pecten. Genus of marine bivalve molluscs (Lamellibranchiata). It includes about a dozen British species, the best known being the clam or great pecten (*P. maximus*), which is used as food. The species are exceedingly numerous, of worldwide distribution, and found at all depths down to about 3,000



Peckforton Castle, Cheshire; seat of Baron Tollemache. On the hill to the right stands Beeston Castle

fathoms. The valves, which have usually an unequal pair of ear-like expansions at the hinge, are variously ribbed and brightly coloured. The



Pecten. Marine bivalve

animal does not use its foot for locomotion, young specimens flitting through the water like butterflies by opening and closing the valves, and when older attaching themselves to rocks, etc., by byssal threads spun by the foot.

Pectin. Gelatinous substance found in fruits, as apples and gooseberries, and in fleshy roots, as carrots and beets. It is this body which causes jams made from fruits to set into a jelly. To supply the natural deficiency in strawberries, cherries, etc., the manufacturer of jams sometimes adds other gelatinising materials, or combines apple and gooseberry pulp with fruits deficient in pectose bodies. Pectin has a nutritious value similar to that of starch.

Pectoral (Lat. *pectus*, breast). Object worn or laid upon the breast. Ancient Roman bronze breastplates and medieval horse pectylres were defensive. The Israelitish high-priest's jewelled pectoral (Urim and Thummim) and the Christian pectoral cross were ritual. In ancient Egypt a pylon-shaped ornamented plaque was placed upon the breast of the embalmed body. See Breastplate.



Pectoral Cross, as used in the Church of England
By courtesy of the Warham Guild

Peculiar (Lat. *peculiaris*, one's own). Ecclesiastical law term for a parish or church that is not subject to the jurisdiction of the ordinary or bishop of the diocese. Some of these, like the Chapels Royal and Westminster Abbey, are royal peculiars under the direct control of the sovereign, while others were subject to the archbishop or to the greater abbeys. Before the Reformation there were about 300 such peculiars in England, but they have now been largely abolished. The court of peculiars is a branch of the court of arches. See Ecclesiastical Law.

Peculiar People. Protestant sect, founded in 1838 by John Banyard. Found mainly in Kent and the E. counties of England,

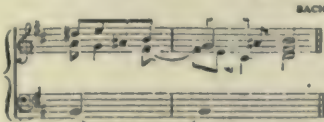
their conspicuous tenet is their refusal to make use of medical treatment in case of sickness, and their reliance on prayer and anointing with oil to effect a cure.

Pedagogue (Gr. *paid*, boy; *agoin*, to lead). Term used for a teacher. Its original meaning was that of a slave who took his master's children to school. From it comes pedagogy as a synonym for the art of teaching. See Education; School.

Pedal (Lat. *pedalis*, pertaining to the foot). On a bicycle, the part attached to the cranks. On them the feet of the rider rest, and by them he brings force to bear upon the cranks, which in turn operate the gear wheel. Pedals for ordinary road riding are generally covered with rubber, but for racing machines for use on road or track, steel-toothed ones are employed, to which toe-clips are often affixed, so that the feet may not slip when travelling fast. See Cycling.

Pedal. Mechanism of musical instruments. Pedals are of various kinds. (1) On the pianoforte they are two levers for the feet, of which the one on the right lifts the dampers and allows the tone to be sustained as long as the strings will naturally vibrate; the one on the left softens the tone (*a*) by shifting the action, sometimes including the keyboard, so that only one or two strings are struck by each hammer in place of the usual three; (*b*) by shortening the blow of the hammers; (*c*) by placing a strip of felt between the hammers and the strings. (2) On the harp are foot levers to raise the pitch of the strings a tone or semitone. (3) On the organ there are (*a*) long wooden keys for the feet, similar to those of the manuals, controlling the deepest toned pipes; (*b*) levers moving the swell shutters; (*c*) levers controlling groups of stops, known as composition, or combination, pedals. See Organ; Pianoforte.

Pedal Point. In music, a note that is sustained regardless of any changes of harmony. It is generally in the bass, but may be placed in any part, especially the top, when it is known as an inverted pedal:



The notes customary for a pedal are the tonic or the dominant, which may be used together, forming the so-called pastoral pedal. It is subject to certain restrictions. Modulation is not allowed save in instances where the tonic is thus

turned into the dominant and vice versa, and it may not be quitted unless it happens to form part of the chord. Owing to its frequent employment in organ music the French term it *point d'orgue*.

Peddar Way. Traditional name for the best preserved Roman road in East Anglia. Traceable for 12 m. from near Ixworth, Suffolk, to Hookham Heath, Norfolk, it runs thence almost straight for 33 m. through Castle Acre to Ringstead. Here it turns and continues to the Roman camp near Brancaster. See Britain.

Peden, ALEXANDER (c. 1626-86). Scottish Covenanter. He became minister of New Luce, Galloway, in 1660, was ejected 1662, and thereafter won a reputation as a wandering preacher-prophet. He visited Ireland, was imprisoned on the Bass Rock, 1673-78, and died at Sorn, Jan. 23, 1686. Buried at Auchinleck, his body was disinterred by dragoons and buried again at the foot of the gallows at Cumnock. See Covenanters; consult also Six Saints of the Covenant, P. Walker, 1901; Men of the Covenant, A. Smellie, 1903.

Pedestal. Term in architecture, (*q.v.*) denoting a block set under a column, to raise the latter above the ground level of a building; it is also used of a supporting member for a statue or ornamental vase. Classical columns were sometimes raised on square pedestals, and the 16th century builders in Italy freely employed this device.

Pedestrianism (Lat. *pedestris*, going on foot). Art of walking. It may be regarded as including (1) walking races over relatively short distances, in which the competitor matches his speed, staying power, and judgement against other competitors; (2) long distance walks, lasting many days, in which the competitor or competitors match themselves against the clock.

Short distance walking races, i.e. races completed without a break, may be over any distance between one mile and a hundred. The record for the shorter distance is 6 mins. 24½ secs., G. Goulding (Canada); for the longer, 18 hrs. 4 mins. 10½ secs., T. E. Hammond. These races are generally walked on oval-shaped tracks. The most noteworthy road race is on the London to Brighton course. The distance is 51 m. 1,607 yds., and has been covered in 8 hrs. 11 mins. 14 secs. by H. V. L. Ross in 1909. The long distance walks are generally done on prepared tracks.

Pedestrian competitions demand the utmost vigilance on the part of judges. The rules are rigid. The walking must be fair heel and toe:

the foot must come to the ground heel first, with the leg straight. It is a most difficult thing in a close race to avoid the temptation to acquire the extra speed and spring, to say nothing of the relief to the muscles, which comes from bending the knee even for a pace or two. The pioneer name in English pedestrianship is undoubtedly that of Captain Barclay (*q.v.*).

Pediculosis. Affection of the skin caused by a minute parasite, of which there are three varieties :



Pediment of the Panthéon, Paris

the *Pediculus capitis* or head louse (*q.v.*), the *P. corporis vel vestimentorum* or body louse, and the *P. pubis* or crab louse, which infests the pubic hair. Children are more often affected than adults with *P. capitis*, and girls more than boys owing to their long hair. The subsequent itching leads to scratching, whereby severe secondary infections may be produced. The mature parasites are easily got rid of, but the ova are difficult to remove owing to their firm attachment to the hair. In young children the hair should be cut close, and white precipitate ointment applied to the scalp. Paraffin, or a mixture of equal parts of paraffin and olive oil, which kills the parasites and the ova, can be used in the case of girls and women.

P. corporis is the largest form of the parasite. It lives and lays its eggs in the underclothing, and sucks blood from the skin, producing severe itching, which may lead to serious eruptions on the skin. Sulphur ointment should be applied to the skin, and the affected clothing baked or boiled. *P. pubis* is smaller than the other forms.

Pedigree. Tabular representation of descent from a given ancestor, and of the relation of different members of a family. All the members of one generation are placed in a line, and those of the next below. The signs and abbreviations in common use are : ↓, signifying descent ; =, placed between two names signifying marriage ; ↓, signifying the person had posterity ; s. and h., son and heir ; dau., daughter ; coh., co-heir ; w., wife ; s.p., *sine prole*, without issue ; v.p., *vita patris*, in his father's lifetime ; b., born ; d., died ; dep., deposed. Dates and other particulars are added

when possible, and occasionally a male is indicated by a small square, a female by a diamond. Shields of arms, impaled or quartered, are often added to show alliances. The word is probably derived from the French *pied de grue*, crane's foot, in allusion to the claw-like marks denoting succession. See Bourbon ; Genealogy.

Pediment (formerly periment, perhaps a corruption of pyramid).

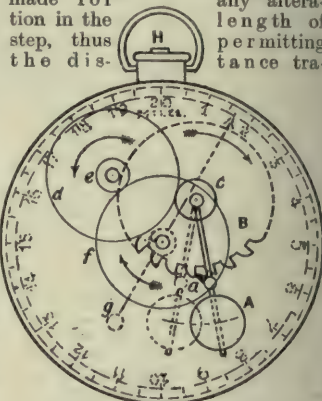
In classic architecture, the triangular crown of a portico at the front or rear of a building. The space within the triangle is called the tympanum (*q.v.*), and is often filled with sculpture. The term is also used of similar formations over doors and windows. In Gothic architecture the height of a pediment equals, or exceeds, its breadth, and it is then known as a gable (*q.v.*). Otherwise, the ordinary pediment is enclosed by the long horizontal line following that of the cornice and two raking lines of equal length meeting over the centre of the latter. See Architecture.

Pedipalpi. Order of arthropodous animals of the class Arachnida. It consists principally of the whip-scorpions, which differ from the true scorpions in having the head and thorax combined, as in the spiders, from which they differ, however, in having the abdomen segmented. The feelers (*palpi*) are more or less developed into nippers (*chela*). The first pair of legs are much longer and more slender than the others. There are no poison glands. The animals are found in damp situations in the hotter parts of the world. They are insect-feeders.

Pedlar. General term for an itinerant vendor of small wares. The word is of uncertain origin, but may be connected with the old and still colloquial *ped*, a basket. In the United Kingdom a pedlar is one who sells goods, or his skill in handicraft, as tinkering, chairmending, etc., on foot, without a horse or ass, being thus statutorily distinguished from a hawker, who uses a horse. A pedlar has to obtain annually a certificate from the police. The term *pedlars'* French is applied to the secret jargon of thieves and vagabonds, and so to any meaningless rigmarole.

Pedometer (Lat. *pes*, foot ; Gr. *metron*, measure). Instrument for indicating the number of steps taken in walking, thus enabling the distance covered to be determined. It is usually constructed

in the form of a watch, upon the dial of which are recorded the number of revolutions of a mechanism actuated by a bob or weight oscillated by the movement of the body, or in some cases by a cord connected with the foot. In some instruments, adjustments are made for any alteration in the length of the step, thus permitting the distance tra-



Pedometer. Diagram illustrating working of ordinary type. See text

velled to be determined more accurately. The figure shows the mechanism of an ordinary pedometer. A is the pendulum bob which, as it swings, actuates ratchet-wheel B by means of pawl a. The motion of B is communicated through a chain of wheels and pinions, c, d, e, f, to the index pointer g, which shows the number of miles walked. H is the stop by which index is returned to zero from any point.

Pedro (1334-69). King of Castile, called the Cruel. Son of King Alphonso XI, he was born at Burgos, Aug. 30, 1334. By his many crimes, including the torture of his treasurer, Samuel Levi, and the murder by his own hand of Abu Said, usurping king of Granada, and by the suspicious circumstances of his wife's death, he incurred the hatred of his subjects ; and his illegitimate brother, Don Enrico, known as Henry of Trastamare, invaded Castile with the assistance of French bands commanded by Bertrand du Guesclin. Pedro fled to Bayonne, where he obtained the help of Edward, prince of Wales, the Black Prince. The Castilian and English troops were victorious at the battle of Navarrete in 1367, but after the Black Prince's departure Don Enrico returned and killed Pedro in a quarrel, March 23, 1369.

Pedro I (1798-1834). Emperor of Brazil, 1822-31. He was son of John VI of Portugal, and on his father's returning from Brazil to Portugal, 1821, was left as prince-

regent of the former country. Joining the party demanding independence, he was proclaimed emperor in 1822, and in 1825 the independence of Brazil was recognized. On the death of his father in the following year he became king of Portugal, but at once abdicated in favour of his daughter, Maria. After an outbreak in Rio de Janeiro he abdicated the Brazilian throne also, April 7, 1831, and returned to Portugal.

Pedro II (1825-91). Emperor of Brazil, 1831-89. He was born at Rio de Janeiro, Dec. 2, 1825, son of Pedro I. and was proclaimed emperor on his father's abdication, 1831. The empire settled down to a long period of peace under him until he was de throne after the revolution of 1889, when he retired to Europe. He died in Paris, Dec. 5, 1891. In 1921 the remains of Pedro II and his wife were taken to Rio de Janeiro for re-interment.

Peebles. Royal and mun. burgh and co. town of Peeblesshire, Scotland. It stands on the river Tweed,



Peebles arms

23 m. S. of Edinburgh on the N.B. and Cal. Rlys. Anciently a residence of the Scottish kings, Peebles occupies a well-sheltered position in the valley of the Tweed and attracts many visitors. Queensberry Lodging, an ancient building, was presented in 1624 by James VI to Lord Yester. In 1857 William Chambers bought it and gave it to the town; through the generosity of Andrew Carnegie it was reconstructed and enlarged. The new buildings, reopened in 1912, contain the council chambers, town hall, library, museum, and



Peebles, Scotland. Parish church, built in 1887



Peebleshire. Map of the inland county of S.E. Scotland

art gallery. There are a hydro-pathic establishment and a good golf course. Tweed and woollen cloth are manufactured. Market day, Tues. Pop. 5,600.

Peeblesshire OR **TWEEDDALE.** Inland county of Scotland. Its area is 347 sq. m. From the valley of the Tweed, which has its source in the S.W. and traverses the entire breadth of the county E., the surface rises on each side in a succession of grass-clad hills scored by fertile valleys. In the S. there has been much planting of trees. On the S. border is Broad Law (2,754 ft.), the highest summit in the county. The chief streams are the Biggar, Manor, Lyne, and Eddestone, all affluent to the Tweed. Peebles is a pastoral county, and sheep are reared in large numbers.

The N.B. and Cal. Rlys. afford transport facilities. Peebles is the county town. In conjunction with part of Midlothian one member is returned to Parliament. Pop. 15,300.

LITERARY ASSOCIATIONS. The co. town claims several celebrated sons. William and Robert Chambers were born there: as also were Thomas Smibert (1810-54), poet and miscellaneous writer, editor of Chambers's Journal, 1837-42; John Veitch

(1829-94), author of History and Poetry of the Scottish Border and poems inspired by Tweed side; and Henry Calderwood (1830-94), writer on philosophy. The county has been rich in writers of famous song. Robert Crawford (d. 1733), author of Tweedside and other well-known songs, lived at Auchinamea. James Nicol (1769-1819), poet and miscellaneous writer, was born at Innerleithen. Sir Walter Scott found much inspiration in the county, as also did Thomas Tod Stoddart (1810-

80) and J. C. Shairp in The Bush Aboon Traquair.

Bibliography. History of Peeblesshire, W. Chambers, 1864; History and Poetry of the Scottish Border, J. Veitch, new ed. 1893; The Story of the Tweed. Sir H. Maxwell, 1909.

Peekskill. Town of New York. It stands on the Hudson, 41 m. from New York City, and is served by the New York Central and Hudson River Rlys. It has a number of manufactures. Peekskill was founded in 1764 and incorporated in 1816. It was important during the war of independence. Pop. 15,900.

Peel OR **PELE.** In mediæval architecture, a small tower or keep. They were found commonly on the borders of Scotland and Wales, and served as places of refuge for the inhabitants in case of raids.

Peel. Coast town and watering-place of the Isle of Man. It is 11 m. N.W. of Douglas, on the Isle of Man Rly. There are manufactures of sails nets, boats, etc., but the



Peel, Isle of Man. Ruins of the castle on St. Patrick's Isle; on the right is the roofless cathedral of St. German

people are principally engaged in the fisheries. Joined to the mainland by causeway is St. Patrick's Isle, which contains the ruin of Peel Castle, mentioned in Scott's *Peveril of the Peak*, and the remains of S. German's Cathedral, a cruciform structure dating partly from the 12th century Market day, Sat. Pop. 2,600.

Peel, ARTHUR WELLESLEY PEEL, 1st VISCOUNT (1829-1912). British statesman. Born Aug. 3, 1829, the



Arthur Wellesley Peel
Elliott & Fry

youngest son of Sir Robert Peel, he was educated at Eton and Balliol College, Oxford, and entered the House of Commons as Liberal M.P. for Warwick in 1865. He was parliamentary secretary to the poor law board, 1868-71; patronage secretary to the treasury, 1871-73; and under-secretary for home affairs, 1873-74. In 1884 he was chosen Speaker, and justly ranks as one of the most able and distinguished occupants of that high office. He retired in 1895, and was made a viscount.

In his later years Peel's name was mainly associated with proposals for temperance reform. He was chairman of the royal commission appointed in 1896 to inquire into the licensing laws. Two reports were presented, the one for which Peel was responsible being that of a minority; it advised a reduction in the number of licensed houses, the compensation being

raised by a tax on them, not on the general public, and this proposal was the basis of the legislation of 1904. Peel died Oct. 24, 1912, his eldest son, William Robert Wellesley, succeeding to his title. Of his other sons, George was M.P. for the Spalding division of Lincolnshire, 1917-18. He wrote on public questions, including *The Future of England*, 1911. Sidney was chosen M.P. for the Uxbridge division of Middlesex in 1918. He served in S. Africa 1899-1900, and in the Great War, and was a member of the British delegation at the peace conference in Paris, 1919.

Peel, WILLIAM ROBERT WELLESLEY PEEL, 2ND VISCOUNT (b. 1867). British politician. The eldest son of the 1st viscount, he was born Jan. 7, 1867, educated at Harrow and Balliol College, Oxford, and called to the bar at the Inner Temple, 1893. During the war between Greece and Turkey he served as a war correspondent for *The Daily Telegraph*. In 1900 he entered the London County Council, where he



2nd Viscount Peel,
British politician
Russell

took a foremost place in the municipal reform party, leading it, 1908-10, and in 1914 becoming chairman of the council. Unionist M.P. for a division of Manchester, 1900-6, he was returned in 1909 for Taunton, which he represented until he succeeded, in 1912, to the viscounty. In 1917 Peel acted as joint parliamentary secretary to the national service department; in 1919 he was made under-secretary for war and air, and in 1921 was appointed chancellor of the duchy. Secretary of state for India, Oct., 1922, to Jan., 1924, he became first commissioner of works, Nov. 1924.

Peel, JOHN (1776-1854). Cumberland yeoman, remarkable for his passion for fox-hunting. Born at Caldbeck, Nov. 13, 1776, he died there, Nov. 13, 1854. He is the hero of the song *D'ye ken John Peel?* written by John Woodcock Graves about 1828-29. See *Songs and Ballads of Cumberland*, ed. S. Gilpin (G. Coward), 1866.

Peel, SIR ROBERT (1788-1850). British statesman. He was born near Bury, Lancashire, Feb. 5, 1788, the son of a wealthy cotton manufacturer, and was brought up in an atmosphere of intelligent Conservatism. He was educated at Harrow and Christ Church, Oxford, and after a brilliant university career entered parliament in 1809. At the age of

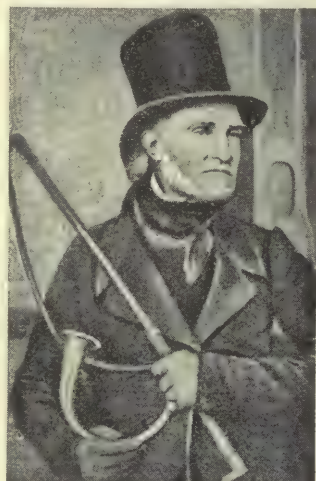
24 he became secretary for Ireland; six years later he retired from the Liverpool ministry, but was chairman of the bank committee which carried the resumption of cash payments in 1819. In 1822 he returned to the ministry as home secretary, and in that capacity carried several valuable reforms, including a very great reduction in the number of capital offences, improvements in the prisons, and the establishment of the Metropolitan Police, who in consequence received the popular appellations of Peellers and Bobbies.



Robert Peel
After Sir T. Lawrence

When Canning became prime minister in 1827, Peel and the duke of Wellington refused to join him, and thenceforward Peel may be regarded as the leader of the Tory party in the House of Commons. He joined the Wellington ministry, formed in Jan., 1828, and supported the duke in passing Catholic emancipation, being convinced against his will of the necessity for that measure by the election of Daniel O'Connell for co. Clare. When Wellington, in 1832, endeavoured to form a Tory ministry in order to pass a less drastic reform bill than that of Lord Grey, the effort was made abortive by Peel's refusal to join; only after Grey's bill was passed did he accept it as an irrevocable *fait accompli*.

Twice, in 1834 and in 1839, Peel was called to office as prime minister, but in both cases was obliged to resign after a few weeks; it was not till 1841 that he was able to take office with a decisive Conservative majority behind him in the House of Commons. For five years he was prime minister. During that period he advanced in



John Peel, the Cumberland huntsman
From a print

successive budgets along the path towards free trade upon which Huskisson had entered before him—on the principle of increasing revenue by reducing tariffs so that the goods were cheapened and the demand for them increased, whereby an actual increase of revenue was attained.

The Corn Law, however, was the grand problem—the problem of maintaining the prices which were deemed necessary for the preservation of the agricultural industry, and at the same time meeting the demand for cheap bread. Peel relied upon the sliding scale, but the sliding scale proved a failure. At last the Irish potato famine of 1845, coupled with the gradual working upon his mind of the arguments of the Anti-Corn Law League, convinced him that cheap bread was more necessary than the protection of agricultural interests.

Since the ministry had taken office as a protectionist government, Peel was unwilling himself to introduce a measure repealing the Corn Laws, though he succeeded in persuading most of his colleagues in the Cabinet of the necessity for the change. But a Whig or Liberal cabinet could not be framed, and it was Peel himself who courageously introduced the measure which was supported by the Whigs and vigorously opposed by the no-surrender section of the Tory party.

At the very moment when the bill for the repeal of the Corn Laws passed its final stage Peel was defeated in the House of Commons on an Irish question and resigned, June 29, 1846. The Liberals came into office, and were there maintained by the general support of the Peelites, with whom they ultimately coalesced in 1852. From 1846–50 Peel, though outside the ministry, remained the most notable figure in the House of Commons. He died on July 2, 1850, from injuries caused by a fall from his horse. *See* Corn Laws.

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Peele, GEORGE (c. 1558–98). English poet and dramatist. Son of a London silversmith, he was educated at Christ's Hospital and Broadgates Hall and Christ Church, Oxford. His court pastoral, *The Arraignment of Paris*, influenced *A Midsummer Night's Dream*, his historical play *Edward I* Shakespeare's *Henry IV*, and his

Old Wives' Tale the theme of Milton's *Comus*. His works, which also include the scriptural *David and Bethsabe* and a number of pageants, possess poetic beauty, glow of fancy, and fervour of patriotism, but no high creative faculty. They were edited by A. H. Bullen, 1888.

Peeping Tom. Name given to the inquisitive tailor of Coventry who looked out on Lady Godiva, and hence applied to any idly inquisitive person. *See* Godiva.

Peep o' Day Boys. Organization of Protestant Ulstermen formed to resist the Catholic Defenders. They were so named from their habit of breaking into the houses of their victims at dawn. Their violence caused much trouble in Ulster, 1784–95. From 1790 onwards many of the Peep o' Day Boys were absorbed in the Orange lodges.

Peerage (Lat. *par*, equal). Literally, the body of peers. The word is now applied, however, to peers and members of their families, i.e. to those who can succeed to titles. In the United Kingdom there are five ranks in the peerage, duke, marquess, earl, viscount, and baron. Baronets have never been ranked as peers.

The possession of a peerage is confined to countries ruled by a monarch, because the root idea is that of personal service to such. Spain and Sweden have peerages, not unlike that of the U.K. Austria and Hungary had such before the Great War. France had a peerage before the country became a republic. A peer of France was one on whom the king conferred that dignity, and from 1814 to 1848 there was a chamber of peers.

Originally a peer simply meant an equal, but its present use dates from the time it was restricted to the possessors of hereditary titles. This came about through the separation of the greater and lesser barons in the 13th century. The former, members of the House of Lords, secured the right to be tried by their equals, or peers, and thus became known as peers. A peer and a member of the House of Lords are not quite the same, as the bishops and the law lords are lords of parliament, but not peers. Peers are created by letters patent, prescribing the conditions under which a title may descend.

A peer-ge may be limited to sons and their descendants, or be extended, as in the case of that of Earl Roberts, to daughters, or, as with that of Earl Kitchener, to a brother. The early peers owed their position to tenure of land,

but this was soon superseded by a writ of summons. There are peers of Scotland, whose numbers cannot be increased; peers of Ireland who can sit in the House of Commons; and peers of the United Kingdom. A woman can be a peeress, but does not sit in the House of Lords. A peerage is said to be dormant when the heir does not assume the title. It becomes extinct when the heirs, according to the patent, fail. Baronies can fall into abeyance. Peerages, or works giving biographical details of peers and their families, include those of Burke, Cockayne, and Debrett. There is also a Jacobite peerage. *See* Baron; Duke; Lords. House of; Title.

Peerage Bill. Bill introduced into the British Parliament in 1720, but not passed into law. Its object was to prevent the sovereign from creating more than six fresh peerages, although it allowed him to replace extinct ones. The bill passed the Lords, but was rejected by the Commons owing mainly to the vigorous opposition of Sir Robert Walpole.

Peer Gynt. Dramatic poem by Henrik Ibsen, first published in 1867. Peer Gynt himself is one of the half mythical and fantastical personages from the peasant life of modern Norway, a typical man of indecision, ever afraid of doing the irretrievable. The work is alternately satirical, fantastic, and finely poetical. E. Grieg made the drama the theme of a well-known suite. *Pron.* Pair Ghint.

Peg. Small pointed or tapered piece of wood, metal, or other material used to fasten together various objects. Such objects are often said to be pegged, e.g. the soles of boots.

The word is also used for a projecting piece of wood or metal used to hang or fasten things on to, e.g. a hat peg, or the peg of a stringed instrument. Tent ropes are strained on pegs driven into the ground. A clothes peg is one with two prongs used for fastening clothes on a line. The word is also used in such phrases as to peg out a claim, meaning to mark out the boundaries of a mining claim according to the law. *See* Bone Implements.

Pegasus. In Greek mythology, the winged horse which sprang from the blood of the Gorgon Medusa, when her head was struck off by Perseus. Pegasus created Hippocrene, the spring of the Muses, with a kick of his hoof, but his further connexion with the Muses, often alluded to in modern poetry, has not been traced earlier than the Italian poet Boiardo (d. 1494). *See* Bellerophon.

Pegasus. In astronomy, one of the constellations. It is easily recognizable by the four stars which mark a great square, and is contiguous to the Zodiacal constellations Pisces and Aquarius. The top left-hand corner of the square is not in Pegasus, but in the constellation of Andromeda. The others are Alpha, Beta, and Gamma Pegasi, whose ancient names were Markab, Scheat, and Algenib. The constellation contains a number of variable stars, double stars, and a well-known stellar cluster.

Peggotty. Name of a family in Charles Dickens's novel *David Copperfield*. Clara is always called Peggotty to distinguish her from Clara, David Copperfield's mother. The devoted nurse of David, she marries Barkis the carrier, who is



Daniel Peggotty in France, looking for Little Em'ly

From the drawing by Fred. Barnard

"willing" to enter into matrimony with her after sampling her cookery. Daniel Peggotty, her brother, is a kind-hearted boatman who searches the Continent for his niece, Little Em'ly, after her elopement with James Steerforth.

Pegmatite (Gr. *pēgma*, anything fastened together). In geology, a vein of quartz and felspar, etc., occurring in granite rocks. Pegmatites occur as dikes or veins in granite masses, and often contain valuable minerals, e.g. garnet, beryl, boron, uranium, cerium, etc., as well as oxide of iron. They are sources of the supply of felspar for porcelain ware, for mica, etc.

Pégoud, ADOLPHE (1887-1915). French airman. He came into prominence by his daring and sensational experiments in flying. He was the first airman to fly upside down, at Juvisy, Sept. 1, 1913, and three weeks later he first looped

the loop. He gave exhibition flights in France and England, 1913-14, and on the outbreak of the Great War joined the French flying corps. He was killed near Belfort in an aerial fight, Aug. 29, 1915.

Pegu. Div., dist., and town of Burma. The div. comprises the lowland N.W. of the Gulf of Martaban, across the valley of the lower Sittang to that of the Irawadi above the delta. The dist. occupies the W. side of the lower valley of the Sittang, and rice is the sole crop. The town is on the Pegu river and is the rly. junction N.E. of Rangoon for the lines to Moulmein and Mandalay. It was formerly the capital of the Pegu empire, overthrown by Burma, 1757. Area, division, 13,258 sq. m.; district, 4,404 sq. m. Pop. division, 2,074,000; district, 429,000; town, 17,000.

Peiho OR HAIHO. River in Chih-li prov., China. It rises in the spurs of the Inshan Mts., and after an E. course it turns S.E. and, flowing to the W. of Peking, empties at Taku into the Gulf of Chih-li. The Peiho, with the other rivers that join it at Tientsin, 47 m. from its mouth, drains an area of 56,000 sq. m., and is liable to extensive floods. By the peace protocol of 1901 the Chinese government undertook to improve the condition of the river below Tientsin.

Peipus OR OZERO CHUDSKOE. Lake of N.W. Russia. It lies between Esthonia and Russia, and is divided into three parts, Lake Peipus proper, Lake Pskov, and the so-called Warm Lake, a narrow channel connecting the two. Its total length is 90 m., and it discharges its waters into the Gulf of Finland by the Narova. In early times it formed the chief frontier between the Slavs and the Finnish Chuds, whence its local name, lake of the Chuds. Its fish supply local markets and Petrograd.

Peiraëus. Seaport of ancient Greece, now commonly spelled Piræus (q.v.).

Piëresc, NICOLAS (1580-1637). French scholar and scientist. A great traveller, he visited England, where he made the acquaintance of Camden, the



A. Pégoud, French airman

historian, and Cotton, the antiquary. He formed an extensive collection of coins and medals, was interested in natural history, botany, and astronomy, and was credited with several discoveries by his friend and biographer Gassendi.

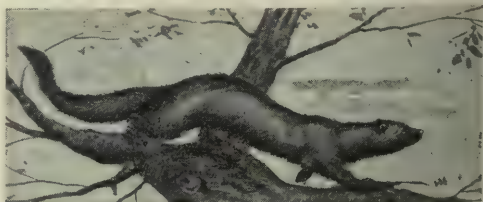
Peirithous. In Greek legend, king of the Lapithæ (q.v.). He led his army to battle with Theseus, but on seeing each other the two leaders embraced, and thereafter became the firmest of friends. Among the distinguished guests whom Peirithous invited to his marriage with Hippodamia were the Centaurs (q.v.). One of them offered violence to the bride, and was slain by Theseus. The result was a general battle, in which many of the Centaurs were killed. After the death of Hippodamia, Peirithous and Theseus carried off Helen from Sparta, and Helen falling to the lot of Theseus, the two friends then descended into Hades to carry off Proserpine or Persephonē as a wife for Peirithous. They were seized by Pluto, from whom Theseus was afterwards rescued by Hercules, but Peirithous remained for ever in chains.

Peisistratus OR PISISTRATUS. Tyrant of Athens (560-527 B.C.). A kinsman of Solon, he at first supported his relative; but, being ambitious of power, allied himself with the "Men of the Mountains," the poorest and most dissatisfied class in Athens. Appearing one day in the market-place covered with blood, he declared that he must have an armed bodyguard.

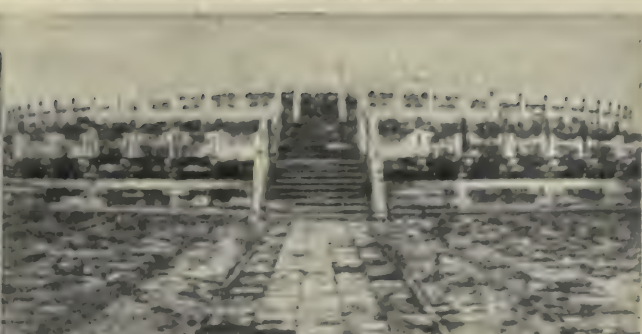
The guard was voted to him by his supporters, and when it had increased from 50 to 400 men he seized the Acropolis and assumed the supreme power. Though twice driven out by opposing factions, by 545 he firmly established himself as autocrat of Athens. His rule was enlightened and beneficent. He was a patron of art.

Peiziëre. Village of France, in the dept. of Somme. It lies 1 m. N. of Epéhy, and was prominent in the Great War, being captured by the British 3rd corps, Sept. 18, 1918. See Epéhy, Battle of.

Pekan (*Martes pennanti*). Fishermarten, wood-shock or black fox of N. America. It is a carnivorous

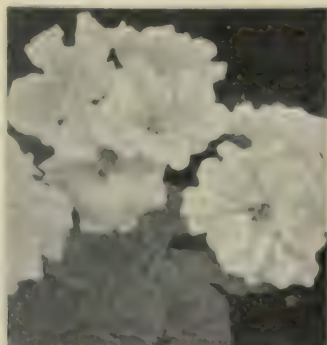


Pekan, the large North American marten



1. Entrance to the British Legation. 2. Open altar of European quarter. 4. Courtyard of the Imperial Palace in the Forbidden City. 5. Temple of the Five Towers, built in 1474, in the suburb of Hai-tien. 6. Ch'ien Men Street, the busiest thoroughfare in the Chinese City

PEKING: SCENES IN THE GREAT METROPOLIS OF CHINA



Pelargonium. Leaves and flower clusters

by gardeners. Most of the Pelargoniums are natives of S. Africa, a few of Australia, and were introduced into Britain at different dates from 1632 onwards. The general method of cultivation is by autumn struck cuttings kept in sandy soil in a cool frame during winter, and placed in gentle heat in early spring, or by seed sown in March in gentle heat. Solutions of nitrate of soda, cow manure, and soot-water are all valuable stimulants when growth has developed.

Pelasgians. Name loosely given to the people who inhabited ancient Greece prior to the Achaeans (*q.v.*). Their exact identity is uncertain. Probably they were a branch of the Mediterranean race, a dolichocephalic or long-skulled dark type, remains of which are found in many parts of Europe and N. Africa.

Pelecypoda (Greek *pelekys*, hatchet; *pous*, foot). Class of the Mollusca, alternatively termed Lamellibranchiata, and more popularly bivalves. The general form and structure of the animals and their shells are exhibited by such familiar species as the cockle, mussel, scallop, and oyster. See Bivalves; Cockle; Mollusca; Oyster; Peeten, etc.

Pelée, MONT. Volcano of Martinique, French West Indies. Small eruptions had been recorded in 1762 and 1851, and in 1902 a disastrous ebullition occurred. In April, the real crater, then known as the Dry Lake, opened, and part of the bounding cliffs, 1,600 ft. in height, was disturbed. Eleven days later an avalanche of black mud destroyed some sugar plantations. Three days later, May 8, the first great eruption destroyed St. Pierre and 30,000 people; on Aug. 30 a second eruption destroyed two villages and 2,500 people. On the last occasion an obelisk or 'rock was protruded 800 ft. above the new cone; it later disappeared. The new cone is 4,400 ft. in altitude.

Peleus. In Greek legend, king of the Myrmidons in Thessaly, and father of Achilles. His wife was Thetis, a sea-deity, daughter of Nereus. At first she refused Peleus, and when he laid hold of her she tried to escape by assuming different shapes. Peleus won her, however, with the aid of Chiron, the centaur. The wedding of Peleus and Thetis was of great magnificence, all the gods being invited, except Eris, the goddess of Discord. See Paris. *Pron. Pee-lew-sa.*

Pelew OR PALAU ISLANDS. Group in the Pacific Ocean. They lie E. of the Philippines and W. of the Carolines. Consisting of 26 islands, mostly of coral formation and many uninhabited, the total area is 170 sq. m. and the pop. about 10,000. The largest is Babelthuap, with a pop. of 3,100. They yield phosphate, copra, bêche de mer, and turtle shells; tropical fruits abound. They were sold by Spain to Germany in 1899. During the Great War the islands were occupied by the Japanese, by whom they are now administered. See Caroline Islands; Yap.

Pelham, HENRY (c. 1696-1754). British statesman. Younger son of Thomas Pelham, made Baron Pelham in 1706, he was educated at Westminster School and Hart Hall, Oxford. His eldest brother was Thomas Holles Pelham, who became duke of Newcastle, and the two were inseparably associated in public life. He became M.P. for Seaford, 1717, and in 1721 a lord of the treasury under Walpole. In 1724 he was made secretary at war, and in 1730 paymaster of the forces. In 1743 he became prime minister



Henry Pelham. British statesman

died March 6, 1754. See Newcastle; consult also *Memoirs of the Administration of H. W. Pelham*, W. Coxe, 1829.

Pelias. In Greek legend, king of Iolcus, the throne of which he had seized from Aeson. When Jason, son of Aeson, came to claim Iolcus, Pelias sent him in search of the Golden Fleece, in the hope that he would perish. See Argonauts; Jason; Medea.

Pelican (*Pelecanus*). Small genus of about six species of large birds. Their extended wings measure from 10 ft. to 15 ft. between their tips. The hind toe is turned forward and united by a web to the other three. Their food is fish, which they seek in the shallow waters of rivers and lakes, and the structure of the somewhat weak bill and neck is well adapted to the capture of such prey, the long upper mandible being hooked at the tip, and the lower mandible carrying a large pouch formed by the loose, naked skin of the



Pelican. White and, top right, crested species of the bird
Gambier Bolton, F.E.S.

neck. When the bag is full, the bird retires to a rock to consume the contents, or to the nest, where the young feed themselves by thrusting in head and neck. The nest, with two white eggs, is placed on the ground among reeds. The genus has representatives in Europe, Asia, Africa, and America.

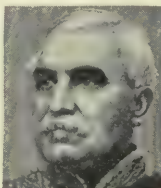
Pelion. Mountain range of ancient Greece. It is in the Thessalian district of Magnesia, near the coast, S.E. of Mt. Ossa. It is famous in Greek mythology as the scene of the conflict between the



Pelion. The town of Volo at the foot of Mt. Pelion, from the Aegean Sea

gods of Olympus and the giants, who are said to have piled Pelion and Ossa on Olympus, to reach the sky. Pelion was also the reputed home of the centaur Chiron (*q.v.*).

Pélessier, AIMAËLE JEAN JACQUES, DUC DE MALAKOFF (1794-1864). French soldier. Born Nov. 6, 1794, he received his military education at La Flèche and St. Cyr, fought in Spain, 1823, and in the Morea, 1828-29. He took part in a number of African campaigns between 1830-55, notably the Laghouat campaign, 1852, and succeeded Canrobert as commander-in-chief in the Crimea, 1855. He took part in the siege and capture of Sevastopol, and was made marshal of France and duc de Malakoff. Ambassador in London, 1858, he returned to Algeria as governor in 1860, and died there, May 22, 1864.



A. J. J. Pélessier, Duc de Malakoff

Pelissier, HENRY GABRIEL (1874-1913). British comedian. A son of Frederic Pelissier, a London



H. G. Pelissier, British comedian

diamond merchant, he belonged to a family of French origin. He was educated at a school kept by a member of the Society of Friends at Scarborough, and then went to Switzerland to learn French. Studying music first in a somewhat casual fashion, he began to write songs, and soon became known as an entertainer. He established the troupe of players called the Follies, whose songs, dances, and especially parodies of popular plays—potted plays, as

they were called—were for some years a feature of London theatrical life. The troupe first appeared in March, 1907, at The Royalty, but it was at The Apollo in 1908 that they made their reputation. Pelissier married in Sept., 1911, Fay Compton, daughter of Edward Compton, the actor. He died Sept. 25, 1913.

Pelitic Rocks.

In geology, name given to those rocks which are, or have been, composed chiefly of clay and impurities. Examples of pelitic rocks are slates, mica schists, and shales. *See* Clay.

Pella. Ancient town of Macedonia. It was situated 21 m. N.W. of the mouth of the Axios (Vardar). The birthplace of Alexander the Great, it was the last capital of the kings of Macedonia.

Pellagra (Ital. *pelle*, skin; *agra*, rough). Endemic disease occurring nearly all over the world, but rare in the British Isles. The cause is unknown, but is believed to be a parasitic infection, possibly conveyed by some form of biting fly. It has been noticed most frequently in communities living near streams. The disease generally commences with the appearance of pigmented patches on the backs of the hands, which are at first taken for sunburn. This may be associated with a mild degree of sore throat, diarrhoea or constipation, and giddiness. These patches disappear in a week or two and the skin underneath then appears normal, or perhaps whiter than the adjacent skin. A year or more may pass, and then probably during the summer there is a return of symptoms in a more severe form.

Pellagra was very prevalent in the S. states of the U.S.A. in 1921. *See* Manual of Tropical Medicine, A. Castellani and A. J. Chalmers, 3rd ed. 1919.

Pellegrini, CARLO (1839-89). Italian caricaturist. Born at Capua, he served in Garibaldi's army, came to England, in poor circumstances, in 1865, and was engaged as caricaturist to Vanity Fair. Between 1869 and his last illness he contributed hundreds of portraits of notabilities to the same journal over the signatures Singe or Ape. He died in London, Jan. 22, 1889.

Pellegrini, CARLOS (1848-1906). Argentine statesman, and doctor of law. A native of the Republic,

trained as an advocate, he had fought in his youth in the war with Paraguay. Elected deputy in 1873, he held the portfolio of War in 1880, and in 1886, when Juárez Celmán became president, Pellegrini was chosen vice-president, succeeding to the presidency in August, 1890. Lacking decision, but an honest and patriotic statesman, Pellegrini was not re-elected in 1893, and did not again figure eminently in the politics of his country. He died in July, 1906.

Pelletan, CHARLES CAMILLE (1846-1915). French politician. Son of Eugène Pelletan (1813-84),



Camille Pelletan, French politician

a Republican politician and writer, he was born in Paris June 23, 1846, engaged in journalism, and was fellow-editor, with Georges Clemenceau, of Justice, 1880.

In the chamber of deputies he was a prominent radical spokesman, and became minister of marine under Combes, 1902-5, but his naval administration was severely criticised. In 1912 he was elected senator for Bouches-du-Rhône, but in the upper chamber was comparatively inconspicuous. Among his writings are *Les Associations Ouvrières*, 1873; *Georges Clemenceau*, 1883; *Histoire Contemporaine*, 1902; and *Victor Hugo*, 1907. He died in Paris, June 4, 1915.

Pelletierine. Liquid alkaloid contained in the bark of the pomegranate (*Punica granatum*). Pelletierine sulphate, a crystalline body readily soluble in water, is employed in doses of from five to eight grains as a remedy for tape-worm.



Carlo Pellegrini, as caricatured by himself in Vanity Fair

Pellico, SILVIO (1788-1854). Italian poet, dramatist, and patriot. He was born at Saluzzo, Piedmont, June 24, 1788. Having edited a paper which was suppressed by the Austrians owing to its liberal opinions, he was suspected of association with the Carbonari, was arrested on Oct. 15, 1820, and in 1822 sentenced to death, but the sentence was commuted to 15 years' imprisonment. He was released under the amnesty



Silvio Pellico

of 1830, and wrote a simple narrative, *Le Mie Prigioni*, 1832, the publication of which caused something of a sensation. It was translated into English by T. Roscoe, 1833, as *My Ten Years' Imprisonment*, and remains Pellico's best known work. He wrote also a number of plays and poems, the most successful being his tragedy, *Francesca da Rimini*, 1818, which won the admiration of Lord Byron. He died Jan. 31, 1854. See *Life*, I. Rinieri, 1899-1901.

Pellitory (*Parietaria ramiflora*). Perennial herb of the natural order Urticaceae. It is a native of Europe, N. Africa, and W. Asia. From a short, woody rootstock, usually between the masonry of old walls, rounded reddish branching stems arise, with alternate oval or lance-shaped, downy leaves. The tiny greenish flowers are produced in short sprays from the base of the leaf-stalks. Under the influence of sunshine, or slight irritation, the anthers explode and little clouds of pollen are seen.

Pells (Lat. *pellis*, skin). Old name for sheepskins. When prepared, the records of the exchequer were written thereon in early days. The clerk of the pells was an official who kept a record of all monies entering and leaving the exchequer. The office was abolished in 1834. See *Exchequer*.

Pelopidas (d. 364 B.C.). Theban general and statesman. In 385 B.C. Epaminondas (q.v.) saved his life in a battle with the Spartans near Mantinea, and the two became devoted friends. It is said that Pelopidas, though a man of wealth, adopted a simple life in order that Epaminondas, who was a poor man, might be able to associate with him on equal terms.

By 379 Pelopidas had liberated his native city from its Spartan garrison, and he took a leading part

in the subsequent struggle with Sparta. He did invaluable service with his Sacred Band, a picked body of Theban youths. During the latter part of his life he engaged in expeditions in the North against Alexander, the tyrant of Phææ, and also went on an embassy to the Persian king. In 364 he again came into conflict with Alexander of Phææ, and after the victory of Cynoscephalæ met his death while impetuously endeavouring to kill his old enemy with his own hand.

Peloponnese or **PELOPONNESUS** (Gr. island of Pelops). The S. portion (mod. Morea) of ancient Greece. It is connected with the N. portion by the isthmus of Corinth. Its original inhabitants were Pelasgians, who were overrun successively by Achæans and Dorians. It was divided, mainly by its mountain ranges, into seven states, Achæa, Corinthia, Elis, Argolis, Messenia, Laconia, and Arcadia, all of which had a seaboard except Arcadia. See *Greece*; *Sparta*.

Peloponnesian War. Name of the war between Sparta and Athens, in which nearly all the rest of



Pellitory. Leaf-stalk with flowers. Inset, bracts surrounded by bracts

Greece was involved. Lasting from 431-404 B.C., the ostensible cause was the quarrel between Corcyra and its mother city Corinth, in which Athens supported the former and Sparta the latter. In reality, it was a struggle between the democratic Ionians of Athens, the islands, and the maritime towns, and the oligarchical, continental Dorians, represented by Sparta.

It may be divided into three periods. (1) The Archidamian War (431-421), so named from Archidamus, king of Sparta, who commanded the forces against Athens. In this the honours of war were equally distributed. The chief incidents were the plague at Athens, the capture of Sphacteria, the defeat of Cleon by Brasidas, and the heroic resistance of the Plataeans under siege. The peace of Nicias arranged a cessation of hostilities for 50 years, but it only

lasted five months. (2) 421-412. This period was marked by the transference of the seat of war to Sicily, the result of which was the disastrous Sicilian expedition, instigated by the ambition of Alcibiades. (3) The Decelean War (412-404), so called from the occupation of Decelea, 14 m. N.E. of Athens, by the Spartans.

The scene of interest lies mainly in the East. The exile of Alcibiades caused him to take the side of the enemies of Athens, and the king of Persia intervened on the side of Sparta. The decisive victory of Aegospotami enabled Lysander to capture Athens in 405, with the result that the "long walls" were destroyed, her navy burnt, and her colonies lost. The effect was to confer the temporary hegemony of Greece upon Sparta. There is no doubt that the importance of the war has been exaggerated, owing to the detailed account given by Thucydides, and that it had little effect upon the general history of the world. See *Greece*: *History*.

Pelops. In Greek legend, the son of Tantalus, king of Phrygia. Being expelled from his native country, he migrated to Pisa, where he became king. He was said to have been killed by his father, and his flesh put before the gods to eat at a banquet. Hermes, however, restored Pelops to life. At Pisa he became one of the suitors of Hippodamia, daughter of King Oenomaus, the condition of winning her being that he should enter for a chariot race with her father, in which unsuccessful competitors were put to death. Pelops won the race by bribing Myrtilus, the king's charioteer, to remove the lynch-pin from his master's chariot wheel. When Myrtilus subsequently claimed the reward promised, Pelops threw him into the sea. As he disappeared Myrtilus cursed Pelops and all his house. This curse caused the succession of tragedies among the descendants of Pelops, such as the crimes of Atreus and the murder of Agamemnon.



Pelops, legendary king of Pisa. British Museum

Pelorus Jack. Local name bestowed on a grampus (q.v.) that was in the habit for years of accompanying vessels through French Pass, between Wellington and Nelson, New Zealand. Travelers looked for it eagerly, and the Maories regarded it as a friendly

minor deity. The legislative council passed a resolution for its protection. The name was derived from Pelorus Sound, where it usually picked up vessels. It was probably not an individual but a succession of grampuses, as these cetaceans frequently follow ships.

Pelota (Lat. *pila*; Span. *pella*, ball). Ball game, but particularly that played in Spain and Spanish America with the cesta, or curved basket attachment for the right hand, originating with the Basques of France, and imported into Spain in 1858, hence Pelota Basque, or Vasca, though the game is known in Spain as *el ble á cesta*, or basket play. The hard ball weighs 120 grammes (about 4 oz.), is made of rubber and wire, and is covered with leather. It is struck violently with the cesta against two walls of cement at right angles, known as the frontón and the pared respectively, in much the same way as in the English game of Fives (*q.v.*). The rules of the game are numerous and complex; and played by teams of skilled professionals, three aside, it is productive of great excitement. It is an inheritance of the Greek ball game, through the Romans, modified by the introduction of the cesta.

Pelotas. Town of Brazil, in the state of Rio Grande do Sul. It stands near the Lagoa dos Patos (*q.v.*), 25 m. by rly. N.W. of the town of Rio Grande do Sul, and is a junction for São Lourenço. It is a commercial centre for coastal trade, and has flour mills, soap and glass factories, and exports preserved meats, hides, tallow, and horns. It was formerly known by the name of São Francisco de Paulo. Pop. 30,000.

Pelsöcz. Town in the Slovakia division of the Czecho-Slovak republic, now known as Plešivec; formerly in the kingdom of Hungary. It is situated on the river Sajó, and is the junction of three rlys., which reach the town from three mountain valleys to the N.E. Pop. 2,393.

Peltasts. Type of light-armed foot soldier of ancient Greece. They bore a spear of moderate length, and took their name from the *pelta*, a crescent-shaped shield with rounded ends. The peltasts were a lighter arm than the hoplites, who bore a long spear and sword, and wore helmet, breastplate, and circular shield.

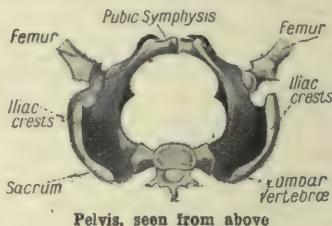
Pelton. Village of Durham, England. It is 6 m. from Durham, with a station on the N.E. Rly. The chief occupation of its inhabitants is found in the surrounding coal mines. Pop. 5,500.



Pelota. Players in the Spanish ball game, before the frontón wall. Inset, the cesta or basket attachment with which the ball is struck

Pelvis (Lat., basin). Bony girdle which connects the trunk with the lower extremities, supports the weight of the body, and contains the pelvic viscera. The pelvis consists of the two innominate or hip bones, one on each side, which meet in front, and are separated behind by the sacrum, terminating in the coccyx.

According to anatomists, the pelvis is divided by a plane, which passes through the promontory of the sacrum and the upper border of the junction formed by the pubic bones. The upper part of the pelvis is sometimes spoken of as the false pelvis, and the lower part as the true pelvis, the line between them forming the brim or inlet of the pelvis, while the space between the inferior terminations of the constituent bones forms the outlet of the pelvis.



Pelvis, seen from above

Pelvoux. Mountain group of France. It is on the frontiers of the depts. of Isère and the Hautes-Alpes, and is bounded by the valleys of the Romanche, Drac, and Durance. Composed chiefly of rose-coloured granite and gneiss and covered with numerous glaciers, it has the form of a horse-shoe open to the E. The most important glacier is that of Mont de Lans. Mont Pelvoux, 12,945 ft.

alt., is one of the highest peaks of the Alps. Pron. Pelvoo.

Pemba. Island situated off the coast of Tanganyika Territory, Africa. It is a British possession, 35 m. N.E. of the island of Zanzibar. Of coral formation, it has an area of 372 sq. m., and is divided into three dists., Weti, Chake-Chake, and Mkoani. It is administered by the Zanzibar government. The chief products are cloves, copra, and rubber. Pop. 83,000. See Zanzibar.

Pemba Bay OR **POMBA BAY.** Bay on the coast of Portuguese E. Africa. About 120 m. N. of Mozambique, it is one of the finest harbours in the world. It covers an area of 40 sq. m. On the shores is the settlement of Porto Amelia (*q.v.*).

Pemberton. District of Wigan, Lancs., formerly a separate area. Served by the L. & Y. Rly., it is a centre for the manufacture of cotton. It was an urban dist. from 1894 to 1904, when it was made part of the county borough of Wigan. See Wigan.

Pemberton, Max (b. 1863). British novelist and playwright. Born at Birmingham, June 19, 1863, he was educated at Merchant Taylors' School and Caius College, Cambridge. Engaging in journalism, he was editor of Chums, 1892-93, and made a success with his adventure story *The Iron Pirate*,



Max Pemberton, British novelist
Elliot & Fry

1893, following it with other stories of this class, *Sea Wolves*, 1894; *The Impregnable City*, 1895; and *Kronstadt*, 1898. Editor of Cassell's Magazine, 1896-1906, he published *The House under the Sea*, 1902; *My Sword for Lafayette*, 1906; *Captain Black*, 1911; *The Man of Silver Mount*, 1918, etc. Among his plays are *The Dancing Master*, 1889; *The Finishing School*, 1904. In 1920 he opened the London School of Journalism.

Pembrey. Seaport of Carmarthenshire, Wales, known also as Burry Port, because the river Burry enters the sea here. It is 4 m. from Llanelly, with a station on the G.W. Rly. It has a harbour and docks, and there are copper-smelting works. Munition factories were established here in the Great War, and in 1917 a farm settlement for Welsh ex-service men. Pop. 4,500.

Pembroke. Mun. borough, seaport, and market town of Pembrokeshire, Wales. The name is a corruption of Penfro, a peninsula in the neighbourhood. It stands on the S. side of Milford Haven, 42 m. W. of Swansea, with a station on the G.W. Railway. The borough includes Pembrokeshire Dock. The chief objects of interest are S. Mary's Church, with an old and massive tower; the ruined castle, and the remains of a Benedictine house, Monckton Abbey. Of the castle, in which it is said Henry VII was born, the keep remains. Underneath the keep is the Wogan, a large cave leading to the shore. Monckton Abbey church is still used. A castle was built at Pembroke about 1100, and as the seat of the powerful earls of Pembroke it became a place of importance. It was the county town, and was the chief port for communication with Ireland. The town began to decline after Tudor times, but its prosperity revived when Pembrokeshire Dock was established. Market day, Sat. Pop. 15,700. Pembroke is also the name of a suburb of Dublin.

Pembroke arms



Pembroke. Town of Ontario, Canada. It stands on Lake Allumette, a widening of the Ottawa river, 220 m. from Montreal, and is served by the C.P.R. and G.T.R. Industries include lumber mills, saw mills, brickyards, and tanning. From here steamers go along the Ottawa. Pop. 5,600.

Pembroke, EARL OF. British title held by the family of Herbert. In the Middle Ages, as Pembrokeshire was a palatine county, it was an important office. The first earl was Gilbert de Clare, created in 1138, and the second his son Richard, known as Strongbow. In 1176, on Strongbow's death, it



Reginald Herbert,
16th Earl of Pembroke

Lafayette

passed to his son-in-law, William Marshal. The Marshal earls held it until 1245. When the family became extinct William de Valence secured the rich earldom by marriage, but his male line failed in 1324. Lawrence, Lord Hastings; Humphrey, duke of Gloucester; William de la Pole, and Jasper Tudor were then in turn earls.

In 1408 Sir William Herbert was made earl of Pembroke, but his son William exchanged it for another title. In 1551, however, Sir William Herbert, of an illegitimate branch of the family, was made earl, and the title has since been held by his descendants. He and his son, Henry, the 2nd earl, were prominent men in the time of Elizabeth; the latter was the husband of Mary Sidney. The 3rd earl was the one whose name is associated with Shakespeare. Philip, the 4th earl, was in 1605 made earl of Montgomery, and later earls have since borne the double title. Thomas, the 5th earl, was a politician in the time of William III. In 1913 Reginald Herbert became the 15th earl. The earl's chief seat is Wilton House, near Salisbury. His eldest son is called Lord Herbert.

Pembroke, WILLIAM MARSHAL, 1st EARL OF (c. 1146-1219). English statesman. Second son of John

le Marshal, he was knighted in 1173, after being for some years a member of the household of Henry, the eldest son of Henry II. In this capacity, till the prince's death in 1183, Marshal figured prominently in the quarrels between the king and his sons. He married Isabel de Clare, an alliance which brought him the earldoms of Pembrokeshire and Striguil. He was among those who persuaded John to sign the Great Charter. On the king's death (1216) he became regent, and held that office till his own death, May 16, 1219. He was buried in the Temple Church, London.

Pembroke, AYMER DE VALENCE, EARL OF (c. 1260-1324). English soldier. He succeeded his father William, a half-brother of Henry III, as earl of Pembroke, June, 1296. On the death of Edward I, in 1307, he was for a short time guardian of Scotland, filling the same position again in 1314. He took an active part against Piers Gaveston, whom he captured at Scarborough, 1312. Pembroke held a command at Bannockburn, 1314, was guardian of England during the king's absence, and one of the judges who sentenced Lancaster to death. He died at Compiègne, June 23, 1324.

Pembroke, MARY HERBERT, COUNTESS OF (1561-1621). Fourth daughter of Sir Henry Sidney and sister of Sir Philip Sidney. She was born at Ticknell Palace, Bewdley, Worcestershire, Oct. 27, 1561. In 1577 she became the third wife of Henry Herbert, 2nd earl of Pembroke. One of the most learned women of her time, and a patroness of Spenser, Samuel Daniel, Nicholas Breton, Ben Jonson, and other poets, she is said to have made Wilton House (q.v.) like a college. Sir Philip Sidney wrote his *Arcadia* (q.v.) for her; and she edited, revised, extended, and published the first printed edition of that work. She translated *A Discourse of Life and Death* from the French of Plessis du Mornay. She died in Aldersgate Street, London, Sept. 25, 1621, was buried in Salisbury Cathedral, and was the subject of the famous epitaph "Underneath this sable hearse," attributed to both Ben Jonson and Browne of Tavistock. See *Mary Sidney, Countess of Pembroke*, F. B. Young, 1912; *The Subject of all Verse*, P. Sidney, 1907.



Mary Herbert,
Countess of Pembroke

After Mark Gerard



Pembroke, South Wales. Town and creek of Milford Haven; castle keep in foreground, from the castle walls

Pembroke, WILLIAM HERBERT, 3RD EARL OF (1580-1630). English statesman. Born at Wilton. Wilt-



William Herbert, 3rd Earl of Pembroke
After Van Dyck

shire, April 8, 1580, he had Samuel Daniel as tutor. He proceeded to Oxford University, where Pembroke College is named after him, succeeded to the title Jan. 19, 1601, and soon after was in disgrace over an intrigue with Mary Fytton. He became lord chamberlain to James I, held office under Charles I, and was chancellor of Oxford University. A poet, he is described by Aubrey as the greatest Maecenas to learned men of any peer of his time. To him and his brother Philip the Shakespeare First Folio was dedicated, and he has been doubtfully identified by Brandes and others with the Mr. W. H. to whom Shakespeare's sonnets are addressed. He died at Wilton, April 10, 1630. *See Shakespeare.*

Pembroke College. One of the colleges of the university of Oxford. It was founded in 1624 by James I. The money was provided by Thomas Tesdale and Richard Wightwick, and an old hall, Broadgates, was obtained. The name of this was changed as a mark of esteem for the earl of Pembroke, then chancellor of the university. The buildings are in S. Aldate's, opposite Christ Church, and are mainly modern. The head is the master, who since the time of Anne has been also a canon residentiary of Gloucester. Preference is given in respect of certain scholarships to candidates from the Channel Islands. The most famous name in the college records is that of Johnson. Other famous names are those of Shenstone, Blackstone, and Whitefield.

Pembroke College. One of the colleges of the university of Cambridge. It was founded in 1346, in memory of her husband, by Mary, widow of Aymer de Valence, earl of Pembroke, and daughter of Guy, count of Chatillon and St. Pol. As Pembroke Hall, or Mary Valence Hall, it received benefits from Henry VI. Pembroke was the first of the Cambridge colleges to have a chapel of its own; the new chapel, by Christopher Wren, 1664, was enlarged by Sir Gilbert and G. G. Scott in 1880-81. Ridley, Grindal, Whitgift, Andrews, and the younger Pitt, Sir Henry Maine, and the poets Spenser, Crashaw, Gray, and Mason were Pembroke men. It was originally founded for a master, 15 scholars, and four Bible clerks.



Pembroke College, Cambridge, arms

Pembroke Dock. Dockyard of Pembrokeshire. Wales. It stands on the S. side of Milford Haven, 2 m. from Pembroke, of which borough it forms part. It is served by the G.W. Rly. In 1814 the government transferred here the dockyard from Milford. It is strongly fortified, covering an area of 90 acres, and has facilities for building warships. Before this it was known as Paterchurch. *See Milford Haven.*

Pembrokeshire. Maritime county of Wales. It has a rugged and irregular coast-line, the indentations including St. Bride's Bay and Milford Haven, while herein are the bold headlands of St. David's Head, St. Ann's Head, and others. Its area is 614 sq. m. Off the coast are some small islands, Caldey being the best known. The surface is undulating and scored with valleys, but there is a range of hills in the N. The Teifi, which divides it from Cardiganshire, the Nevers, and the two Cleddaus, E. and W., are the chief rivers. The G.W. Rly. serves the county. Haverfordwest is the county town. Fishguard is a modern port and Newport an old one. The chief industry is the rearing of cattle. The county is in the diocese of St. David's and sends one member to Parliament.

Called Dyfed, Pembrokeshire was ruled by the princes of Wales until some time after the Norman



Pembroke College, Cambridge. First court and the hall
Frith

conquest. The Norman barons then built castles here. In the 12th century Flemings settled here, and Pembrokeshire was soon divided into a Welsh part in the N.W. and an English part in the S.E. The English part became known as little England beyond Wales. It was made a palatine earldom, remaining so until 1536. The county contains a number of castles, e.g. Manorbier, Pembroke, Pictou, and Carew. Pop. (1921), 92,000. *See History of Little England beyond Wales, E. Laws, 1888; Historical Tour through Pembrokeshire, R. Fenton, 1903.*

Pembroke Table. Article of furniture. Introduced about the middle of the 18th century, it was named after an earl of Pembroke. It has four squared taper legs with spade feet and two rectangular drop leaves. *See Furniture.*

Pemmican. Preparation of food originally made by the American Indians with lean meat denuded of all fat, dried in the sun and wind, and pounded into a paste. When dry it will keep good for an indefinite period.



Pembroke College, Oxford, arms



Pembroke College, Oxford. Front of college buildings; over the gateway, rooms occupied by Johnson

Pemphigus (Gr. *pemphix*, bubble). Group of diseases of the skin characterised by the formation of blisters or blebs. Acute malignant pemphigus is a disease met with in butchers and others who handle carcasses. Chronic pemphigus is usually seen in elderly, debilitated persons. The cause is unknown. The eruption generally appears first on the lips or front of the chest. Eventually, large areas of the body may be affected. The disease is serious and may end fatally. *Dermatitis herpetiformis* is another form of pemphigus which is believed to be sometimes due to exposure, and to cold and exhaustion. The condition is associated with severe itching.

Pen. Instrument for writing with a fluid. The earliest writing instruments were the brushes of the Chinese and Egyptians, and the stylus of the Greeks and Romans. The origin of the quill for writing is uncertain, but it was for many centuries the chief writing instrument, holding its own till the middle of the 19th century. The constant necessary re-sharpening of quills led to attempts to make them durable by tipping them with various substances and imitating them in metal.

The first steel pen was made by Wise, of London, in 1803, but they were not a commercial success till Joseph Gillott and others, between 1820-30, began their manufacture in an improved form by machinery. The pens are cut from steel sheets into blanks, the latter stamped or pressed into shape, hardened by plunging into hot oil, tempered, polished, and the point divided by a special shearing machine. In all some sixteen processes are required to make an ordinary steel pen or nib. Gold is used for the nibs of fountain pens, as it is



Pembrokeshire. Map of the south-western county of Wales, containing Milford Haven, the finest natural harbour in the United Kingdom

more flexible, the points being made more durable by the addition of iridium. Special types of pens are used for ruling, duplicating, lithography, drawing, etc. See Fountain Pen; Ink; Writing.

Pen. Name given to a small enclosure for animals, e.g. a sheep pen. The term is also applied to the animals themselves, in particular in the case of poultry, a pen of poultry being usually a cock and four hens. A small dam in a stream is also called a pen, as is also a female swan; the first

growth of feathers are pen or pin feathers of birds, and the spoon-shaped quill once used for taking snuff is a pen. In architecture, a pen is a pend or arch. The word occurs in many Welsh names, and means a head or headland, corresponding to the Scottish Ben, e.g. Penberby, Pencor Helen,

Penal Code. Name given to a code of laws concerning crimes and offences and their punishments. The term includes the systematic arrangement of the laws, and most civilized nations have embodied their laws in some such code, the most famous of modern times being the Code Napoléon of France, which has served as a model for the codes of several other European nations.

More specifically, the term is used for those penal laws of the 17th and 18th centuries which were passed against the Roman Catholics in England and Ireland. Under these laws Catholics were forbidden from acquiring land by purchase, and those educated abroad in the Catholic faith were debarred from succeeding to real property, their estates passing to the next Protestant heir. The most severe of the penal laws were abolished in 1780, and most were done away with by various Acts in the 19th century. See Catholic Emancipation; Criminal Law; Toleration.



Fen and pen-making. Processes in the manufacture of a steel pen. 1. Rolled sheet of steel from which blanks are cut. 2. Scrap metal remaining after blanks are cut. 3. Blank. 4. Pierced pen. 5. Marked or stamped with maker's name. 6. Raised or curved. 7. After hardening. 8. Tempered. 9. Scoured. 10. Ground. 11. After point has been slit. 12. Coloured

By courtesy of Perry & Co., Ltd.

Penal Servitude. In English criminal law, a form of punishment which superseded transportation by the Penal Servitude Act, 1853. Under the Act, imprisonment may extend from a minimum of three years to a maximum of life. Convicts sentenced to penal servitude wear a distinctive dress marked by a broad arrow, and are usually employed on useful work of some nature, taught a trade, etc. The clothes for convicts, uniforms for warders, etc., are made, for example, by convict labour, and many government buildings are erected by convicts. By good conduct a considerable remission of sentence may be earned, and the home secretary is empowered to grant licences or tickets-of-leave to convicts, upon such conditions as may be thought fit. The Act of 1853 was amended by those of 1861, 1864, and 1891. Convict establishments for prisoners undergoing penal servitude are Dartmoor and Parkhurst, the former used exclusively for males, the latter being chiefly occupied by prisoners in ill-health, Broadmoor for criminal lunatics, Aylesbury for females, and Peterhead, Scotland. Until 1921 Portland was also an important convict prison. *See* Criminology; Portland; Prison; Punishment.

Penal Statutes. Statutes imposing penalties or punishments for offences committed against the terms thereof. In construing a penal statute it is the duty of the judge, in all courts where the English system prevails (including America), to adopt the construction most favourable to the person charged with the offence. It is sometimes put in this way: A penal statute must be strictly construed. On the other hand, a remedial statute, passed to remedy a grievance or to confer a benefit, must be widely or liberally construed.

Penance (Lat. *poenitentia*, repentance). Ecclesiastical term for the turning of a sinner from sin to repentance; for the acts that form the visible proof of repentance; for the penitential discipline of the Church, and, in the R.C. communion, for the sacrament for the remission of sin committed after baptism, a remission effected by true supernatural sorrow, sincere confession, satisfaction, and priestly absolution. In the R.C. Church, confession of mortal sin is held to be an absolute duty, and the sinner is bound to seek for absolution. This has been the case since the Lateran Council of 1215. Originally the expiatory part of penance involved heavy and lasting penalties. The wearing of sackcloth and

ashes was once adopted as a sign of repentance; sometimes delinquents were required to make confession and express sorrow while standing in church clad in a white sheet. In process of time, however, the penalties came to be confined to prayers, fasting, and almsgiving. At one time it was possible for others than the person upon whom penance was imposed to do penance for him, if not altogether, at least in part. Rules, called Penitentials, were drawn up for the guidance of the confessor. *See* Absolution; Confession.

Penang. One of the Straits Settlements. A British crown colony, it comprises the island of Penang, and Province Wellesley on the Malay Peninsula, and frequently is taken to include the Dindings with the island of Pangkor farther S. Penang Island has an area of 108 sq. m., and contains George Town, the great port of N. Malaya. Province Wellesley includes 280 sq. m., and has 45 m. of coast; it is traversed by the main W. rly. of Malaya from Singapore to Siam, and a branch goes to Prai, whence steam ferries make connexion with George Town. Both Penang and Prov. Wellesley have numerous motor roads.

Penang Island was bought from the native state of Kedah in 1785, and Province Wellesley was ceded by the same state in 1798. The East India Co. administered the territory until 1867, when the crown colony was established. Pop., including the Dindings, 306,000. *See* Malaya; Straits Settlements.

Penang Lawyers (*Licuala acutifida*). Shrub of the natural order Palmae. It is a native of the island of Penang, Malaya. Its stems are about five ft. in length and about an inch thick. At the top there is a tuft of fan-shaped leaves, with prickly stalks. The name belongs properly to the stout walking-sticks into which the stems are converted after scraping and straightening.

Penarth. Urban dist., watering-place, and seaport of Glamorganshire, Wales. It stands on the Ely, where it falls into Cardiff Bay, 4 m. from Cardiff and 166 m. from London. It has a station on the Taff Vale Rly. For the shipping there is a tidal harbour and commodious docks, with special accommodation for storing coal and oil. The buildings include churches, a technical school,

and an art gallery. For visitors there is a pier and a fine esplanade, also good bathing. Penarth was nothing but a small village before 1859, when work was begun on the harbour. Pop. 15,500.

Peñas, GULF OF. Large opening of the Pacific, indenting the coast of Chilean Patagonia. It is 80 m. wide at its mouth and penetrates inland about 70 m., containing the islands of Xavier and Guaianeco.

Penates. Household gods of the ancient Romans. *See* Lares.

Pencil (Lat. *penicillum*, a little tail). Instrument for writing and drawing. The word is now chiefly used of the black lead or similar pencils, i.e. those pencils made of wood and containing a central core of lead, graphite, coloured chalk, slate, or other material. The modern black lead pencil contains no-lead, the writing material being graphite (*q.v.*) and clay.

The earliest writing pencils were made with lead, graphite pencils being introduced into Great Britain in the 16th century. In the modern methods of manufacture, the graphite is reduced to a powder, mixed with clay and water to the consistency of dough, and forced through dies the diameter of the finished lead. The long graphite and clay sticks are dried, cut into pencil lengths, and then heated until all the moisture is thoroughly driven off. The greater the amount of clay in the mixture the harder the pencil. The graphite-clay sticks are then inserted into semi-circular or semi-hexagonal parallel grooves, cut in a slab of wood which is ultimately divided into a number of pencils. A similar grooved slab is laid on the first, glued firmly, the separate pencils cut apart, shaped, polished, varnished, etc. The whole process from beginning to end is carried out by machinery. Coloured pencils are made of chalk, clay, etc., with colouring pigments added; copying-ink pencils are made of graphite with an aniline dye added; while slate pencils may be either unprotected rods of slate or wooden



Penarth, South Wales. The parish church



Pencil. Processes in making a lead pencil. 1. Milling, or grinding lead and graphite. 2. Pressing the lead which emerges as a thread in plastic state from the machine to be broken into lengths. 3. Grooving the wood. 4. Lengths of lead in fire-box for baking in kiln. 5. Moulding or cutting. 6. Automatically stamping maker's name. 7. Tying in bundles

By courtesy of Roynce & Co., Ltd.

pencils with a slate core. A modern form of pencil consists of a metallic holder to which refills can be supplied. *See Graphite.*

Penda (c. 577-655). King of Mercia. He became king about 626. A heathen and a warrior, in 633 he helped to defeat and kill Edwin, king of Northumbria, while in 642 he killed in battle another Northumbrian king, Oswald. In 654 or 655 Penda again invaded Northumbria, but was defeated and slain, Nov. 15, 655. *See Mercia.*

Pendant. In architecture, a rigid hanging ornament, often very elaborate, suspended from the summit of a Gothic vault, or from the bottom of a roof post or other constructional member below a ceiling. The term is sometimes used for an ornament hung from the neck. *See Gothic Architecture.*

Pendennis. Novel by Thackeray published in 1850 with the full title, *The History of Pendennis, His Fortunes and Misfortunes, His Friends and His Greatest Enemy.* The author utilised some of the experiences of his own early life in narrating the story of his hero, and sketched several of the characters from actual people, the most notable instance being that of the clever, shiftless Captain Shandon, who was based on W. Maginn (q.v.).

Pender, Sir John (1816-96). British engineer. Born Sept. 10, 1816, and educated at Glasgow, he entered the textile industry in

Glasgow and Manchester. He became interested in submarine telegraphy and was a director of the first Atlantic cable company. In 1865 he helped to form the Anglo-

Pendlebury. District of Lancashire, England. It is $3\frac{1}{2}$ m. N.W. of Manchester, on the L. & Y. Rly. It contains part of Swinton and Pendlebury urban dist. Pop. 10,000.



Pencil. Successive stages in the making of a lead pencil. 1. Rough wood. 2. Wood when grooved. 3. Grooved wood with lead in position. 4. Block of wood made up of 2 and 3 placed together, enclosing lead in grooves. 5. Ends of block levelled. 6 and 7. Stages in moulding the block into pencils. 8. Pencil painted and polished. 9. Finished bundle

American company, which, amalgamated with the Telegraph Construction and Maintenance Company, laid the Atlantic cable in 1866. He later developed the eastern cables, and was interested in the electric lighting of London. M.P. for Totnes, 1862-66, and Wick Burghs, 1872-96, and knighted in 1888, he died July 7, 1896.



Sir John Pender, British engineer

Pendleside Series. In geology, the name given to a series of rocks between the upper division of the Carboniferous limestones and the Millstone grits. The series consists chiefly of black limestones and shales. It is so called from its development at Pendle Hill, Lanes.

Pendulum. Rigid body free to swing on a horizontal axis under the influence of gravity. Theoretically a simple pendulum is the name given to a pendulum which consists of a particle of matter suspended from a point by a weightless string. The time taken for such a simple pendulum to make one complete

beat is $2\pi\sqrt{l/g}$ where l is the length of the string, and g is the acceleration due to gravity. This law applies only for small oscillations, and for such the period of beating is constant at any particular place. Since, however, it varies with g , the same pendulum taken to different parts of the earth, or to different altitudes, serves as a means of calculating the force due to gravity.

Any solid object suspended from a horizontal axis performs oscillations similar to those of a simple pendulum, and in dynamics is called a compound pendulum. A seconds pendulum is one that makes a complete beat in one second. A compensation pendulum is one which is compensated against changes of temperature. Without some such compensation the length of an ordinary pendulum, usually made of a metal rod with a weight attached, would increase in hot weather, and the pendulum therefore beat slower. Such pendulums take advantage of the different rates of expansion of different materials, and are very necessary in the construction of astronomical clocks.

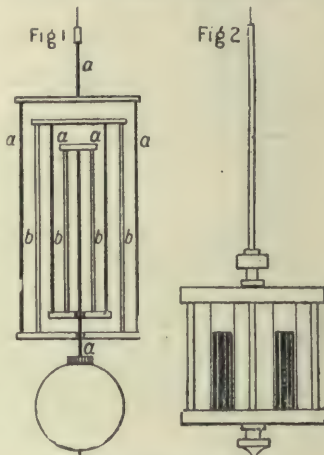
Fig. 1 shows a gridiron compensating pendulum, in which a, a, a are steel rods and b, b, b are brass rods. The expansion of the steel rods lowers the bob of the pendulum, while the expansion of the brass rods raises it, the two thus compensating one another. Fig. 2 shows a mercurial compensating pendulum, the expansion of the mercury tending to raise the centre of gravity of the bob, and that of the supporting rod to lower it.

Besides its use in clocks and for obtaining the value of g , the pendulum has been used in the famous experiment of Foucault to show the rotation of the earth. A ballistic pendulum is one used to measure the velocities of shot or bullets. The bob of the pendulum is replaced by a wooden block into which the shot or bullet is fired. The distance through which the block moves and the consequent time of oscillation of the pendulum enables the velocity of the projectile to be calculated. See Atwood's Machine; Ballistics; Clock; Foucault.

Penelope. In Greek legend, wife of Odysseus (*q.v.*). The long absence of her husband caused a number of suitors for her hand to come to the royal palace at Ithaca, where, in spite of her refusals, they lived riotously. She promised to make up her mind as soon as she had finished a garment, of which she secretly unwove each night as

much as she had woven in the day. *Pron.* Pe-nellopy.

Peneplain. Name given to an area which has been reduced to a surface so nearly a plain (*pene*, almost) that it could not be distinguished from one by the eye. The plains of the Hudson Bay and Gulf of Bothnia (Baltic Sea) areas, and



Pendulum. Examples of compensating pendulums. See text

of the New England States, are good examples. These are the remains of ancient highlands which have been worn down by frost, ice, rain, rivers, etc. *Pron.* peeny-plane.

Penetanguishene OR PENE-TANG. Town of Ontario, Canada. It is on the G.T. Rly., on an inlet of Lake Huron, 32 m. N.N.W. of Barrie in Simcoe co. It engages in



Penelope, the wife of Odysseus. From a Greek sculpture in the Vatican, Rome

the lumber and leather trades. During the war with the U.S.A. the town was fortified as a Canadian naval station. A regiment of French scouts, the bulk of the garrison, was rewarded with a grant of land and exemption from taxation, a privilege still enjoyed by their descendants. Pop. 4,000.

Peneus. Ancient name for the river of Greece now known as the Salambria (*q.v.*) or Salamvria.

Penge. Urban dist. of Kent, England. Adjoining Lower Sydenham, on the Surrey border, it is 6 m. S. of London, on the S.E. & C. and L.B. & S.C. Rlys., and is linked up with the surrounding dists. by trams and motor-buses. Formerly a detached hamlet of Battersea, and until about 1830 merely a common, part of it was absorbed for the Crystal Palace and part given over to the builder. The Watermen's and Lightermen's Asylum dates from 1839, and has a museum of marine and other curiosities. Pop. (1921), 26,278.

Penge Case, THE. British *cause célèbre*. In Sept., 1877, there appeared before Mr. Justice Hawkins, at the Old Bailey, on a charge of murder, Louis and Patrick Staunton, the latter's wife, Elizabeth Ann, and her sister, Alice Rhodes. The victim was Harriet Staunton, wife of Louis, a woman of weak intellect, with a fortune of £3,000. Within a few months of marriage Louis Staunton had deprived her of her last halfpenny, and then determined to make an end of her, so that he might marry Alice Rhodes. In 1876 the brothers were living at Cudham, Kent, and in a garret at Patrick's house Harriet was imprisoned and slowly starved to death. When she was on the point of death, they removed her to lodgings at Penge. She died on arrival there, and the doctor at Penge communicated with the coroner. All four prisoners were convicted and sentenced to death. Alice Rhodes was pardoned, the sentences on the other three being commuted to penal servitude for life. The case is famous for the speech for the defence by Sir Edward Clarke (*q.v.*), and is described in his Autobiography. See The Trial of the Stauntons, ed. J. B. Atlay, 1911.

Penguin. Name given originally to the extinct great auk, but now applied to the several genera of the order Impennes. They are sea-birds with boat-shaped bodies, legs placed very far back, the toes webbed, and the wings useless for flight. The latter are entirely without quills and the feathers covering them are small and scale-like. They are incapable of flexure, but

are worked from the shoulder with a somewhat rotatory action as efficient paddles. The feathers of



Penguin. Yellow-crowned species, found in the Southern Pacific and Antarctic Oceans

the body form a thick, close coat, but these also approach to scales in character. The birds stand perfectly erect, and with their great paddles held loosely at their sides present a grotesque appearance when they assemble in thousands at their breeding places. The Macaroni Penguins (*Eudyptes*) have long, curling crests on their heads. A "Jackass" or braying penguin is found at the Cape of Good Hope. Their range extends from the equator to the Antarctic.

Penguin. In aeronautics, popular name for a type of machine used for training pilots, which had clipped wings with which it was impossible to fly. The pupil learnt thereon the handling of the controls while travelling over the ground at a high speed. The word penguins was used as a nickname for the members of the Women's Royal Air Force.

Penicuik or **PENNYCUK.** Police burgh of Midlothian, Scotland. It stands on the N. Esk river, 10 m. from Edinburgh, with a station on the N.B. Rly. The buildings include the tower of the old church of S. Kentigern, and the Cowan Institute. Penicuik House of the 18th century contains some objects of historic and other interest. The name means cuckoo's hill. Pop. 2,700.

Penington, SIR ISAAC (c. 1587-1661). Lord mayor of London. Son of a wealthy merchant, he turned his attention to politics, zealously espousing the puritan cause. He was elected M.P. for the city in 1640, and quickly became prominent for

his uncompromising speeches. As lord mayor of London, 1642, he raised immense loans in the city for his party, was one of the bitterest opponents of Laud, and later sat as a commissioner at the trial of the king, but would not sign the death warrant. In the same year, 1649, he was a member of the council of state. At the Restoration, Penington was brought to trial and condemned to death, but the sentence was commuted, Oct., 1660, to imprisonment. He died in the Tower, Dec. 17, 1661.

Sir Isaac's eldest son, Isaac Penington (1616-79), joined the Society of Friends and became one of the leading adherents of that form of faith. He wrote a good deal and passed much of his time in prison, dying Oct. 8, 1679.

Peninsula (Lat. *pene*, almost; *insula*, island). Projecting piece of land almost surrounded by water. Peninsulas are commonly formed by the submergence of mountainous regions, especially if the mountains of the sunken landmass are arranged in long chains, e.g. the Italian, Balkan, and Malay peninsulas. Most peninsulas point S., the only important exceptions being Yucatan and Jutland.

Peninsular and Oriental Steamship Company. British steamship line, usually called the



P. & O. Co. Flag.
Top, white; bottom, yellow;
left, blue; right, red

P. and O. The original Peninsular company was founded in 1835, and five years later was incorporated under its present title. From its in-

corporation the company has held the British government mail contracts to India and Egypt, and in 1852 was given that to Australia. In 1851 the first screw steamer was run, and the line has always kept abreast of modern developments, though the passage through the Suez Canal has necessarily limited the size of the vessels. In 1910 the Blue Anchor line was purchased. The head offices are at 122, Leadenhall Street, London, E.C.

Peninsular War. Struggle carried on by Great Britain as the ally of Spain and Portugal against France, between 1808-14. This name was given to it because it was waged in the Iberian peninsula.



Sir Isaac Penington, Lord Mayor of London

The Spanish people, over whom Napoleon had placed his brother Joseph, rose in revolt, and secured the surrender of a French force at Baylen in July, 1808. The Portuguese had joined the movement, and in Aug., 1808, the directors of British policy, having realized the possibility of striking at France through Spain, sent out Sir A. Wellesley (later duke of Wellington). He landed in Portugal with a force of 12,000 men, routed a small army at Roliça, and won a battle at Vimeiro. But Sir Hew Dalrymple, who was in supreme command, restrained an advance; and signed with Junot the convention of Cintra, by which the French undertook to evacuate Portugal. One reason for Dalrymple's delay was the knowledge that Sir John Moore was on the way to the seat of war with 10,000 men.

The war continued, however, and Napoleon himself came to Spain. Sir John Moore, now in command, invaded that country, with the intention of cutting the French communications. Orders were given him to join with a force under Sir David Baird, and large armies of Spaniards being in the field, successes were hoped for. But Napoleon routed the Spanish forces with great rapidity and ease, and advancing towards the British he quickly changed the situation. Having joined Baird and fought a cavalry action at Sahagun, Moore decided to retreat, and followed by the enemy, under Soult, he made his memorable march to Corunna. There, Jan. 16, 1809, he turned and defeated Soult. Moore was killed, but his army was embarked.

The next stage began with the return of Wellesley, who, in April, 1809, landed at Lisbon, fought his way across the Douro, and in July 27, 1809, won the battle of Talavera. Failing to secure the effective cooperation of the Spaniards, who had lost heavily in a series of battles in their own country, or to secure reinforcements from home, he abandoned Spain, and during the winter of 1809-10 constructed the defensive lines of Torres Vedras to cover Lisbon. Drawing the enemy after him, he fell back thereto, fighting in Sept., 1810, the battle of Busaco, after which the advancing French captured the frontier fortresses of Badajoz and Ciudad Rodrigo.

Wellington, early in 1811, returned to the offensive. He detailed a force to attack Badajoz, and in May won the battle of Fuentes d'Onoro and captured Almeida. Albuera quickly followed, but throughout the year Badajoz and Ciudad Rodrigo defied all his

efforts. In 1812, however, both were stormed, and Wellington entered Spain. In July he won the great battle of Salamanca and occupied Madrid, which was captured, after a first attempt had failed, in Aug., 1812; but an advance of the French armies forced him to fall back to the frontier of Portugal. Following another pause, which he used to reorganize the armies of his Spanish and Portuguese allies, he was successful in June, 1813, at Vittoria. As a result of the greatest battle of the war, the French were driven into their own country. The last stage was the passage of the Pyrenees and the advance into France. There several battles were fought, notably for the possession of San Sebastian. Then in Oct. Wellington crossed the Bidassoa and secured the fortress of Pampeluna. A strong French position on the Nivelle was the next objective, and it was only after some hard fighting in Dec. that this river was passed. Some desperate fighting for the possession of Bayonne followed. This included the battles of the Nive, four days of combat in Dec., the passage of the Adour, and the battle of Orthez in the following Feb.

The retreating French next stood before Toulouse, which was entered after another victory in April, when the abdication of Napoleon ended the war.

The British losses were put down as 36,000. The French lost heavily, too, while this "running sore," as Napoleon called it, was one of the chief causes of his overthrow. See Albuera; Badajoz; Ciudad Rodrigo; Wellington, etc.; consult also History of the War in the Peninsula and S. of France, Sir W. Napier, new ed. 1886; History of the Peninsular War, C. Oman, 1902-11.

Peñíscola. Town of Spain, in the prov. of Castellon de la Plana. It stands on the Mediterranean; 5 m. by road S. of Benicarlo and 80 m. N.N.E. of Valencia. Built on a rocky islet connected with the mainland by a narrow isthmus, it is called the Gibraltar of Valencia. Originally a Moorish fortress, it was captured by James I of Aragon in 1233. Pop. 3,000.

Penistone. Market town of Yorkshire (W.R.), England. It stands on the Don, 12 m. from Sheffield, on the G.C. and L. & Y. Rlys. The church of S. John the Baptist is an old building, and there is a grammar school, founded in 1392. The industries include steel works, saw-mills, and brewing. Stone and coal are worked in the neighbourhood. It gives its name

to a division returning one member to Parliament. Market day, Thurs. Pop. 3,400.

Penitentiary. Word used in several senses. Commonly it is synonymous with prison. In the R.C. Church a penitentiary is a priest attached to cathedral churches, whose duty is to deal with the punishment passed on penitents for grave sins. The word is also used for the central office in Rome dealing with such questions, presided over by the grand penitentiary. See Prison.

Penjdeh or **PANJDEH.** Village of Turkistan. It stands near the union of the rivers Kushk and Murghab. Here, in March, 1885, an incident occurred which nearly led to war between Great Britain and Russia. The boundary line between Afghanistan and Russian Turkistan was being marked out, when an Afghan force, having refused to withdraw, was attacked by the Russians and driven away. Great Britain looked at the matter as the protector of Afghan interests, but the excitement soon died away.

Penkridge. Town of Staffordshire, England. It stands on the river Penk, W. of Cannock Chase, 6 m. from Stafford and 134 m. from London. Served by the L. & N.W. Rly., it has an agricultural trade, while stone is quarried in the neighbourhood. The church of S. Michael and All Angels is a fine building; it was once a collegiate church. Pop. 2,400.

Penley, WILLIAM SYDNEY (1851-1912). British actor. Born at St. Peter's, Thanet, the son of a school-



W.S. Penley

In character as The Private Secretary

master, he was educated at his father's school in Westminster. He first appeared on the stage in 1870, and after playing some minor parts with considerable success, made his name as a comedian in The Private Secretary. His reputation, however, rests still more upon his appearances in Charley's Aunt. He died Nov. 11, 1912.

Penmaenmawr. Urban dist. and watering-place of Carnarvonshire, Wales. It is 4 m. from Conway, with a station on the L. & N.W. Rly. It is visited for

the beautiful scenery around. Penmaenmawr Mt., 1,550 ft. high, is the N. extremity of the Snowdon range. On it stood, until demolished in 1920, the remains of a large British fort. Pop. 4,000.

Penn, SIR WILLIAM (1621-70). English sailor. He was born prob-



Sir William Penn, English sailor

ably at Bristol, the son of a sea captain, and held his first command in the navy in 1644, on the parliamentary side. In 1651-53 he was engaged in the pursuit of Prince Rupert, and in the Dutch War

rendered distinguished service as second in command to Blake, 1653. In the following year he was sent to the West Indies on an expedition which failed in its first objective, the capture of San Domingo, but took Jamaica. On his return Penn was committed to the Tower for reasons which remain obscure, but was shortly released. He accompanied Montagu, afterwards 1st earl of Sandwich, in the Naseby to bring Charles II back to England at the Restoration, being knighted by the king as he came on board. Appointed a commissioner of the navy, he served under the duke of York, and died Sept. 16, 1670.

Penn, WILLIAM (1644-1718). English Quaker, founder of Pennsylvania. The son of the admiral

Sir William Penn (1621-70), he was born in London, Oct. 14, 1644, and while studying at Christ Church, Oxford, became converted to Quakerism, and was expelled in



William Penn

After B. West

1661. He spent some years in France, Italy, and Ireland, and even engaged in military duties, but by 1668 had become once more closely identified with Quaker life and doctrine, and was imprisoned, 1668-69, for publishing an uncensored tract, and again in 1670-71 for infringing the Conventicle Act.

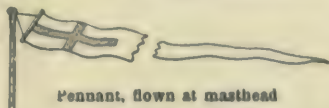
He inherited a considerable fortune from his father, preached the Quaker message in England, Holland, and Germany, and was able to use his social influence on behalf of his persecuted co-religionists. In 1676 he took a leading part in the foundation of a Quaker colony in

West New Jersey, and followed this up five years later by securing from the duke of York a grant of the territory which was to form the state of Pennsylvania (q.v.), and as governor drew up its memorable constitution, establishing freedom of worship within its boundaries. In 1682 he crossed to America to take possession of his territory, fixed on the site for its capital, to be named Philadelphia (q.v.), and at Shackumaxon made his treaty of friendship with the Indians.

Penn remained in Pennsylvania until 1684, and again from 1699–1701, but his later life was passed in supporting the efforts of the Friends in England. He was intimate with James II., and was thus again able to use his influence to secure the release of the imprisoned Quakers and a measure of tolerance. His alliance with James, unbroken by the revolution of 1688, led to his arrest in 1690, and from 1692–94 he was deprived of his colonial powers. His later years were clouded by ill-health and money troubles, caused by his expenditure on his religious work and by an untrustworthy agent at home. Penn died at Ruscombe on May 30, 1718, and was buried at Jordana, Buckinghamshire.

He was a man of solid and up-standing character, deeply religious, and with a fine clarity of style. Although lacking in judgement in some respects, the accusations of double-dealing made against him have only weak foundations. See *Society of Friends*; consult Quaker and Courtier, the Life and Work of W. Penn, Mrs. Colquhoun Grant, 1908; *The Peace of Europe and the Fruits of Solitude*, a selection from his writings, 1916.

Pennant or **PENNON** (Lat. *penna*, plume). Term applied to a long flag narrowing to a point, sometimes forking at the end. In this sense, a pennant was formerly borne on a lance by a knight bachelor, sometimes with his armorial bearings upon it. It is used in British lancer regiments. In the nautical sense, the pennant, or pendant, is a long streamer-like



Pennant, flown at masthead

flag flown at the mast of a vessel in commission, and lowered when the vessel goes out of commission. A broad pennant, short and forked, is flown to show the ship of the commodore of a squadron.

Pennant, THOMAS (1726–98). British naturalist. Born at Down-
ing, Flintshire, June 14, 1726, he

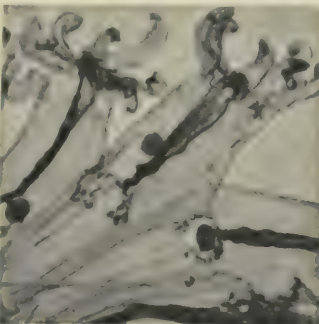
was educated at Wrexham and at Queen's College, Oxford, but took no degree. In 1754 he visited Ire-



Thomas Pennant,
British naturalist

land, thus making the first of his tours in the British Isles. His *British Zoology* was started in 1761, the first part appearing in 1766. It was followed by his *History of Quadrupeds*, 1781, which established his reputation. Many of Gilbert White's letters in the *Natural History of Selborne* are addressed to Pennant, who was considered an authority on all matters of natural history. He died Dec. 16, 1798. His best known works are *Tours in Scotland*, 1771–90; *Tours in Wales*, 1778, ed., with memoir by Rhys, 1883; *Account of London*, 1790; *Outlines of the Globe*, 1798–1800. See his *Literary Life*, 1793.

Pennatula. Sea Pen. Genus of horny corals (Acyonarian Anthozoa), which present an appearance



Pennatula. Polyps of Pennatula phosphorea, greatly magnified
F. Martin Duncan

similar to a quill-pen, i.e. to the wing-feather of a large bird. It is really a colony of polyps. There is a central stalk of horny lime, of which the lower part may be buried in the sea-bed, while from the upper portion branches spread out on each side and are fringed with polyps. Some of the species are luminous, as the small British *Pennatula phosphorea*, of a dull purple colour and only a few ins. long. It is found in warmer seas up to a foot in length.

Pennell, JOSEPH (b. 1860). American etcher, lithographer, and author. Born at Philadelphia, U.S.A., July 4, 1860, he studied at the local academy and School of Industrial Art. He spent much time in Great Britain, being prominently associated with the International Society, and other for-

ward movements in art: was the author, with his wife, Elizabeth Robins (q.v.), of the standard Life of J. McE. Whistler, and besides being represented in state and municipal galleries all over the world, was president of the Senefelder Club (lithography), and a prime authority on lithography.

Great industrial undertakings, e.g. the Panama Canal, and British munition works during the Great War, furnished many subjects for his art.

Pennenden Heath. Common in Kent, England. Near Maidstone, it has been made into a recreation ground for that town. Its interest lies in the fact that it was for long the place where the men of Kent used to hold their meetings.

Pennine Alps. Division of the Alps on the borders of Switzerland and Italy. They lie between the Bernese Alps on the N. and the Graian Alps on the S.W., with the Lepontine Alps on the E., dividing the Rhône and Dora Baltea valleys. They include some of the grandest and loftiest summits in Europe, as the Great St. Bernard, Grand Combin, Dent Blanche, Matterhorn, and Monte Rosa.

Pennine Chain. Mountainous region of N. England. It forms the S. portion of the Central Uplands of Britain, and extends S. from the Scottish border as far as the great curve of the Trent: the S. portion is the Peak. Its continuity is broken by the Tyne and Aire Gaps, which facilitate communication between E. and W. On the N.W. it is continuous with the Cumbrian upland, the lowest point being the Shap saddle between Edendale and the flats round Morecambe Bay. Geologically, it is an uplift of carboniferous rock which has been denuded down to the lower members of the series, the millstone grit and mountain limestone, and is in the main a rugged bare moorland with many peat bogs; the coal measures have disappeared from the heights, but occur in great extent on both sides of the uplift in the coalfields of N. England. The loftiest summits are Cross Fell, 2,892 ft., Mickie Fell, 2,591 ft., Whernside, 2,414 ft., Ingleborough, 2,373 ft., and Kinder Scout, 2,088 ft.

Pennisetum. Genus of mostly annual grasses of the natural order Gramineae. They are natives of tropical and sub-tropical regions.



Joseph Pennell,
American etcher
Elliot & Fry



Pennisetum. Leaves and flowers of the genus. Inset: left, single flower; right, flower-spike

and are grown chiefly for ornament, many of the species forming handsome tufts, with arching leaves and plummy flower-spikes.

Pennsylvania. State of the U.S.A. It lies adjacent to the states of Ohio, New York, New Jersey, Delaware, Maryland, and West Virginia. The Delaware river, on which stands Philadelphia, forms the E. boundary, and the state touches Lake Erie in the N.W. corner. The surface varies from the flat country of Lancaster, Chester, and Bucks cos., to the high ridges of the Allegheny Mts. The chief rivers include the Delaware, Susquehanna, and Allegheny. Its area is 45,126 sq. m.

Pennsylvania has great mineral wealth, iron, coal, anthracite, and petroleum being found in large quantities, the mining products representing about one-quarter of the total output of the U.S.A. Agriculture is important, the chief crops being hay, corn, wheat, and oats. Pennsylvania engages in most industries represented in the U.S.A.: steel works, tin-plate, and iron-working, and the making of pig iron, rails, silks, woollens, leather, glass, and tobacco. Rly. and waterway transport are highly developed. Harrisburg is the capital, and the chief towns include Philadelphia, Pittsburgh, Reading, and Erie.

Early settlements were made by Dutch and Swedes, 1614-43, and the colony became attached to New York, 1664-82. Its growth as an individual state was due to William Penn, who gave it that liberal and democratic basis which helped its rapid growth. Scottish, Irish, and German immigrants formed its early stock. The old proprietary government was converted into a state in 1776, this constitution being revised in 1790. Pop. 8,720,150. See Franklin, Benjamin; Penn, W.

Penny. British bronze coin, one-twelfth of a shilling. Originally the penny was a silver coin,

of which 240 weighed a pound, in imitation of the Roman denarius. Hence the pennyweight (dwt.), the 240th part of 1 lb. troy. Also known in Anglo-Saxon times as the *scot*, it is called penny (Anglo-Saxon *pening*, *pending*, perhaps meaning little pledge) in the laws of Ine (q.v.). Till the reign of Edward I the coin was indented with a cross, enabling it to be divided into halfpennies and farthings. Silver pennies were coined until the reign of Charles II, but steadily decreased in weight. In 1672 halfpennies and farthings of copper were coined, and a copper penny in 1797. The bronze penny was introduced in 1860. See Numismatics.

Penny Bank. Name given to a class of savings bank that receives deposits as low as a penny. Many such were established in Great Britain during the 19th century, including the National Penny Bank, and later they were set up in connexion with elementary and other schools. In some cases arrangements are made by which the money invested can be transferred to the P.O. Savings Bank. One of the largest is the Yorkshire Penny Bank. See Savings Bank.

Penny-royal (*Mentha pulegium*). Perennial herb of the natural order Labiatae. A native of Europe, N. and W. Asia, and N. Africa, it has a creeping rootstock, and branching, leafy stems. The small leaves are oval or oblong, with toothed edges. The tubular, two-lipped, lilac flowers are borne in whorls around the upper part of the stems. From the fresh tops and leaves an oil is distilled which is used in medicine.

Penny Wedding. Wedding at which the guests pay for the entertainment and also contribute towards furnishing the home. At marriages among the poorer classes, especially in Scotland and Wales, it was formerly the custom for the couples to invite, more or less indiscriminately, as many guests as they could find, on condition that they should defray expenses.

Pennywort OR PENNY-LEAF. Name given to a wall plant better known as the wall pennywort (q.v.); also to the White-rot or Marsh Pennywort (*Hydrocotyle vulgaris*).

Penobscot. River of Maine, U.S.A. Rising close to the Canadian border, it flows E. to Chesuncook Lake, then S.E., and finally S. to the Atlantic, which it enters through Penobscot Bay. It is about 360 m. long and navigable for 25 m. Many paper and pulp mills are dependent on the river for water power; the greater part of the basin, 8,500 sq. m., is forested.



Penny, British copper coin. Actual diameter, 1½ in.

Penobscot Bay. Inlet on the coast of Maine, U.S.A. It is divided into two portions by a chain of islands, and measures 30 m. in length and 21 m. in breadth. It receives the Penobscot river.

Penology (Gr. *poînē*, punishment; *logos*, science).

Name given to the study of the punishment of criminals.

With every advance in civilization the punishment and reclamation of the criminal have proceeded on lines which have mitigated force and substituted methods of reformation. The death penalty, torture, solitary confinement, and segregation were all obvious forms of forcible repression of crime, by striking terror into the mind of the criminal, which were tried from the earliest times. Russia with her Siberia, France with her Îles du Salut, and Great Britain with her penal settlements in America and Australia, are three notable instances of repression by segregation, and all failures. At the beginning of the 19th century in the British Isles there were some 200 offences punishable with death, and a corresponding state of affairs existed in other countries.

The failure of severe punishment to prevent many minor crimes, the large number of recidivists, and the insanitary and evil atmosphere of prisons of that date turned the attention of reformers to other methods. John Howard, Mrs. Elizabeth Fry, William Wilberforce, and others began to study and suggest reforms, which culminated in the 20th century in an entire revolution in the treatment of criminals.

Under the existing British prison system prisoners are encouraged to earn promotion from a lower to a higher grade by good behaviour and industry; appeal is constantly made to their honour; and where considered advisable they are appointed to positions of trust, free from supervision. Prisoners are, where possible, taught trades if they do not already know one, and fitted in every way possible for a return to civilian life. Aid societies and institutions of various kinds have sprung into existence with the object of further helping the criminal on his release and inculcating

the principles of good citizenship. The Prison Act, 1898, Probation of Offenders Act, 1907, the Prevention of Crime Act, 1908, and the Children Act have all advanced legislation on similar lines in Great Britain. The Children Act, 1908, has revolutionised the penal law for the imprisonment of young persons under 16.

In the United States of America reform has proceeded on still more advanced lines. At the Elmira Reformatory in New York the indefinite or indeterminate sentence has been introduced. Under this system a prisoner is given a minimum maximum sentence, and is released at any time between the two periods according to the judgement of the authorities as to his fitness to return to civilian life. Since the opening of the Elmira Reformatory in 1876 the indeterminate sentence has been tried in a large number of other American prisons. In others prisoners are put on their honour, work without warders, and are allowed certain privileges of visiting outside amusements, *e.g.* picture palaces. The system has been reported to work with very good results. See Borstal System; Criminology; Transportation; Prison; consult also State of Prisons in England and Wales, John Howard, 1784; Penological and Preventive Principles, William Tallack, 2nd ed. 1896; The English Prison System, Sir E. Ruggles-Brise, 1921.

Penrhyn. District of Carnarvonshire, Wales. It adjoins Bangor, being near the N. entrance to the Menai Strait. It is chiefly known for its connexion with the slate quarries, the slate being shipped from Port Penrhyn on the Menai Strait. Penrhyn Castle, the seat of Baron Penrhyn, stands in a park, 7 m. in circumference, through which the Ogwen flows. An imposing building, it was erected late in the 18th century. Of Mona marble, it is in the Norman castellated style. One of the Welsh kings is said to have had a palace here

Penrhyn OR TONGAREVA. Coral atoll in the S. Pacific, belonging to New Zealand. It is 720 m. N. of Rarotonga in the Cook Islands, and is noted for its pearl fishery. The lagoon has an area of 90 sq. m., a quarter of which is covered with pearl shell. It was discovered in 1788 and annexed to New Zealand in 1901. Pop. 335.

Penrhyn, BARON. British title borne by the family of Douglas-Pennant since 1866. Richard Penrhyn, this being one spelling of the name, a landowner in N. Wales, was made Baron Penrhyn in 1763, but the title became extinct on his death in 1808. The estates passed to a kinsman, George Hay-Dawkins-Pennant, and from him to his daughter, who became the wife of Col. E. G. Douglas (1800-86), a son of the earl of Morton. He was made Baron Penrhyn in 1866. His son and heir, George Sholto Gordon, took the name of Douglas-Pennant and became the 2nd baron. He was Conservative M.P. for Carnarvonshire, 1866-68 and 1874-80, but is better known as the owner of the Penrhyn slate quarries, where a strike began in 1900 and lasted three years. He died March 10, 1907, when his son, Edward Sholto (b. 1864), became the 3rd baron. The family seat is Penrhyn Castle, Carnarvonshire, and the estates lie around it.

Penrith. Urban dist. and market town of Cumberland, England. It stands on the Eamont, 12 m. from Carlisle, and is served by the L. & N.W., N.E., and Cocker-mouth, Keswick and Penrith Rlys. S. Andrew's Church has an old tower and other features of interest. There is a 14th century grammar school and the ruins of a castle. Two of the inns are old buildings, one of them showing a room in which Richard III slept. In the neighbourhood are Edenhall and Brougham Castle, while there is a fine view from Penrith Beacon, 940 ft. high. The chief industries are brewing, tanning, and a trade in agricultural produce.

Penrith is a very old place and



Penrith, Cumberland. The parish church of S. Andrew

was given a fair and market early in the 13th century. One of the Nevilles, then lords of the town, built the castle as a defence against the numerous raids of the Scots. In the 18th century clocks and watches were made here, while cloth and linen were woven on hand looms. Market day, Tues. Pop. 9,000.

Penrith. Town of New South Wales, in Cumberland co. It is 34 m. W. of Sydney by rail, and stands at the foot of the Blue Mountains in the valley of the Nepean river. It is one of the oldest settlements in Australia. Pop. 2,500.

Penryn. Mun. borough and market town of Cornwall. It stands on the estuary of the Penryn river, which here falls into Falmouth Harbour, 3½ m. from Falmouth, with a station on the G.W. Rly. The chief industries are tanning, brewing, the making of chemicals and paper, and the export of granite which is polished here. It has a town hall and a parish church. Here are the ruins of Glasney Church, a collegiate foundation, once a centre of literary activity.

In the Middle Ages Penryn was a flourishing seaport. It was made into a borough, was granted fairs and markets, and had a considerable foreign trade. From 1553 to 1918 it was separately represented in Parliament. Falmouth being united with it for this purpose from 1832. Its decline set in with the silting up of the harbour and changes in the trade routes. It is still a borough, under a mayor and corporation. Market day, Sat. Pop. 3,100.



Penrith. Seal of urban district council



Penryn arms



Penrhyn, N. Wales. Keep and garden front of the 18th century castle, seat of Baron Penrhyn

Penrith

Pensacola. City and port of entry of Florida, U.S.A., the co. seat of Escambia co. The third largest city in the state, it stands on Pensacola Bay, about 6 m. from the Gulf of Mexico and 57 m. E. by S. of Mobile, Alabama, and is served by the Louisville and Nashville and other rlys. and by several lines of steamers. It has a large land-locked harbour, defended by two forts, and a navy yard, and trades in coal, fish, cotton, and timber. Settled by Spaniards in 1696, it was alternately in the hands of the French, Spaniards, and British before finally being acquired by the U.S.A. in 1821. In 1861 the Confederates held the navy yard for a time. Pensacola became a city in 1895. Pop. 31,000.

Pensacola Bay. Inlet on the coast of Florida, U.S.A. Escambia Bay and East Bay are extensions on the E. side of the bay, which is 12 m. long and 2½ m. in average breadth, and has an entrance breadth of less than 1 m. Its mean depth is about 30 ft. One of the securest and largest harbours in the Gulf of Mexico, it is a winter rendezvous of the U.S. navy.

Penshurst. Village of Kent, England. It is 5 m. S.W. of Tonbridge and 33½ m. from London, with a station, 2 m. from the village, on the S.E. & C.R. The church, dating from about 1200, but much restored, has some old brasses and other monuments of note. The village hall and club are modern. Penshurst's chief glory is Penshurst Place, which, with its park of 350 acres, has inspired poets from the days of Ben Jonson and Waller to those of E. B. Browning and Swinburne. Heterogeneous in architecture, with grey walls and battlemented towers encrusted with lichen and moss, its great feudal hall is 64 ft. long, with central hearth and steep, timber-supported roof.

The manor, owned once by the family of Penchester or Pencestre—there is an effigy of Sir Stephen de Penchester in the church—became the property of Sir John de Pulteney (d. 1349), who built the hall, Humphrey, duke of Gloucester, and others. It passed in 1552 to Sir William Sidney, grandfather of Sir Philip Sidney, the hero



Penshurst. Interior of the banquet hall in Penshurst Place, looking towards the musicians' gallery

of Zutphen, in the possession of whose descendants it has remained ever since. Pop. 1,570. See Visits to Remarkable Places, W. Howitt, 1840.

Pension (Lat. *pendere*, to pay). French word used for both a boarding house and a boarding school. It is now more general in the former sense.

PENSIONS: NAVAL, MILITARY, & CIVIL

Sir Leo Chiozza Money, late Parliamentary Secretary to the Ministry of Pensions

This article deals mainly with the pensions payable to those who were disabled in the Great War and their dependents. For other branches of the subject see Civil Service; Old Age Pensions. See also Artificial Limbs; Insurance; Wages

A pension (Lat. *pensio*, payment) is a stated allowance made to workers, soldiers, and others who have retired owing to age or infirmity or other causes. Apart from old age pensions, pensions are paid to civil servants, the employees of local authorities, banks, insurance companies, and other business houses on certain stated conditions as to length of service, etc. Judges also receive pensions on retirement. By an Act of 1869 there are in the United Kingdom twelve pensions available for ministers who have left office after serving for a certain number of years and are without adequate means of support. £1,200 is distributed yearly among literary and artistic persons or their survivors, these being the civil list pensions.

There are an endless number and variety of schemes, but the main division is into contributory and

non-contributory. In the former the payments of the employees are usually based on actuarial figures. Pensions paid to officers of the army and navy take the form of half-pay or retired pay. All civilized countries give pensions to civil servants and other officials. The U.S.A. spent an enormous sum of money in paying pensions to those who fought in the Civil War.

In the past the grant of pensions to courtiers and others, without any regard to past services, became a public scandal, and this was especially so with regard to the pensions charged in the 18th century on the revenues of Ireland. Many of these pensions were perpetual, i.e. they passed like an estate from father to son. In 1887 they were reported against, and in a short time most of them were commuted.

Fighting men's pensions were the subject of legislation in the 16th century. In the reign of Elizabeth an Act was passed, the preamble of which ran that "it is agreeable with Christian charity, policy, and the honour of the nation, that such as have . . . adventured their lives and lost their limbs or disabled their bodies . . . in the defence and the service of her Majesty, should at their return



Penshurst, Kent. Penshurst Place, the mansion of Lord de L'Isle and Dudley, where Sir Philip Sidney was born in 1554

Pensionary.

Name of an official in the Netherlands. He was so called because his remuneration was described as a pension. The chief Dutch and Flemish cities had their pensionaries, the first appearing in the 15th century. They were responsible for the business of the city, their duties being not unlike those of a town

be relieved and rewarded." Chelsea Hospital, which remained a seat of military pensions authority until 1917, was begun in 1682.

Greenwich Hospital was founded in 1694, and given a parliamentary vote of £2,000 a year. Both Chelsea and Greenwich, however, were largely paid for by the soldiers and sailors themselves; in 1696 an Act of Parliament levied 6d. a month on seamen's pay for the latter. Chelsea Hospital was entirely built by sums deducted from soldiers' pay, and for long maintained by the same means. Greenwich Hospital, more fortunate, obtained various windfalls, but at the beginning of the 19th century it could not house one-fourth of the numerous claimants for insurances. Greenwich ceased to be a pensions authority in 1869.

The Crimean War saw the establishment of the Royal Patriotic Fund, which raised the sum of nearly £1,500,000. Its administration was subsequently marked by irregularities and scandal, which led to legislation in 1866. With funds afterwards renewed, it remained in existence and was employed in administration by the Pensions Act of 1915.

Control during the Great War

When the Great War broke out the matter of pensions was in various hands: (1) The admiralty, (2) the war office or army council, (3) the Chelsea Commissioners, and (4) the Royal Patriotic Fund. Control was uncoordinated, and for some time no attempt was made to establish a state department charged solely with the task of caring for the disabled soldiers and the dependents of the fallen. The Army Pay Warrant of 1914 provided for privates a total disability war pension of 10s. 6d. to 17s. 6d. a week, which might be increased by a further 3s. 6d. a week in very bad cases, such as the loss of both arms. On May 25, 1915, a new warrant raised the full disability war pension to 25s. a week, and provided 2s. 6d. for each child. Earning capacity reduced the pension in cases of partial disability. If a man could earn 15s. a week, he could get no more than 10s. pension, making his total income 25s. Widows of soldiers killed in action became entitled to 10s. if not over 35 years of age, 12s. 6d. if not over 45, and 15s. if over 45.

In Nov., 1915, a Naval and Military War Pensions Act was passed, which set up (1) a statutory committee of the Royal Patriotic Fund Corporation of 27 members, some appointed by the state and some by the corporation, charged

with the care of "officers and men . . . and their wives, widows, children and other dependents," and commanded to make supplementary grants, but not provided with any state funds for the purpose; and (2) local committees to assist the statutory committee, also unprovided with funds.

The statutory committee was abolished in June, 1917, and the ministry of pensions, established in 1916, became the sole war pensions authority until Sept. 1, 1921, the legal end of the war, since which date any new war pensions claims must be made to the appropriate naval or military authority.

New Principle of Classification

On Dec. 20, 1916, the officials of the new pensions ministry and their statutory advisors passed to the consideration of a new pensions warrant. A new principle was adopted of classifying disabilities in order to simplify administration. For the first time facial disfigurement was recog-

stand, however much the cost of living may fall. In 1919 a further increase of 7s. was made, raising the full pension to 40s. This 7s. may be revised upwards or downwards according to the cost of living, but no further adjustment is to be made before April, 1923.

Under the War Pensions (Administration Provisions) Act, 1919, every man suffering from a disability attributable to or aggravated by service in the Great War and not due to his serious negligence or misconduct, has a statutory right to receive such a pension as may be awarded by royal warrant. The 1921 scale, as defined by the warrant of Dec. 6, 1919, for the army; the order in council of June 11, 1920, for the navy; the king's order of May 11, 1920, for airmen, is shown in the accompanying table in its application to seamen and marines, army privates, and airmen. The following table is a summary of the First Schedule of the Royal Warrant:

DISABLEMENT PENSIONS FOR SPECIFIC INJURIES
SCALE APPLYING TO ARMY PRIVATES, AIRMEN, SEAMEN OR MARINES

| Specific Injury | Proportion Payable | Pension Per Week |
|--|--------------------|------------------|
| | Per Cent. | s. d. |
| 1. Loss of two or more limbs, or an arm and eye, or a leg and eye, or both hands, or both feet, or a hand and a foot, or both eyes. Total disablement. Advanced incurable disease. Very severe facial disfigurement. Lunacy. | 100 | 40 0 |
| 2. Amputation of right arm through shoulder. | 90 | 36 0 |
| 3. Total or severe amputation of leg, or r. arm below shoulder, or l. arm through shoulder. Severe facial disfigurement. Total loss of speech. | 80 | 32 0 |
| 4. Specified amputations less severe than under 3, e.g. amputation of leg below hip, with stump exceeding 5 inches. Total deafness. | 70 | 28 0 |
| 5. Specified amputations less severe than under 4, e.g. amputation of leg below middle thigh. | 60 | 24 0 |
| 6. Amputation of leg below knee, or left arm below elbow with stump exceeding 5 inches. Loss of one eye. | 50 | 20 0 |
| 7. Loss of thumb, or of four fingers of right hand, etc. | 40 | 16 0 |
| 8. Loss of thumb, or of four fingers of left hand, etc. | 30 | 12 0 |
| 9. Loss of two fingers either hand, etc. | 20 | 8 0 |

nized as a specific disability calling for liberal treatment. The "alternative pension" was introduced. The scale pensions were not to be reduced on account of earning capacity. The widow of a pensioner was to inherit one-half of her late husband's pension until and unless she remarried. In due course the 1917 pensions warrant, embodying these and other new features, became operative. It was repeatedly improved as experience of its working revealed defects.

The 1917 pensions warrant raised the private's full disability pension to 27s. 6d. per week. Further increases were made in 1918 and in 1919 in recognition of the fact that the rise in the cost of living had reduced the real value of the scheduled scale. In 1918 20 p.c. was added to the 27s. 6d. a week, raising it to 33s. This 33s. is to

The cases above the rank of private in which less than 100 p.c. disablement is suffered are subject to the sliding scale already given. Thus a warrant officer Class 1, who has become totally deaf through war service, is placed in category four and receives 70 p.c. of 60s., or 42s. per week. It will be seen by the summary schedule given that the specific categories are not taken below 20 p.c. of full pension. In cases where the assessment is less than 20 p.c. a gratuity or final weekly sum may be awarded. A married full pensioner is allowed 10s. per week in respect of his wife unless he married (1) after discharge; (2) after the end of the war; or (3) after the disablement occurred. If the wife is separated from her husband, the 10s. may be granted to her. In the case of an "unmarried wife," if she has

From separation of the two, the
with a view to the fact that at the
same time of the day.

A married full pensioner is allowed for each child under the age of 16: he 10 the number three, and a wife's allowance is paid her, for the first child 10 sh. per week, and for each under child 10 per week: 10 where the mother is dead, for the first child like a week, for the second child 10 sh., and for each child after the second 10. Widows and children's allowances are subject to the sliding scale.

Parsons und Pennington: Barometer

The principle of the alternative pension is that it would be subject to limit a man's pension to the standard scale, if before the war he earned more than his war injuries enable him to earn. The alternative pension is based on the pensioners' pre-war earnings, and is in calculation for the standard pension and wives' and children's allowances if any. It represents the difference between the pre-war and the present earning capacity with this limit, that the alternative pension and the actual earnings stand not together exceed £5 per week. If a pensioner is totally blind or has lost both eyes, or both legs, he is assumed to have no earning capacity. Higher rates are awarded to those whose pre-war earnings exceeded 25s per week. To meet the rise in wage rates, an addition of 5s per to pre-war earnings is made in calculating alternative pensions.

age, or a widow with children eligible for all manner, two-thirds of her husband's pre-war earnings, up to a maximum of \$60. 00 a week, or (b) in the case of a widow not over 40 years of age, and with one child eligible for assistance, one-half of her husband's pre-war earnings, up to \$30. 00 per week.

Persons to Whom and Parents

Separated wives and unmarried wives are also eligible for pensions. A separated wife is granted a pension equal to the amount due to her under a separation order or otherwise paid by her husband, but not less than 3s. 6d. per week and not more than 12s. 6d. a week. An unmarried wife who has drawn separation allowance is granted 12s. a week in addition to the children's allowance if she has the man's children in her charge; otherwise she receives 12s. a week for the period of the war and 12 months thereafter. A widow's pension ceases on her remarriage, but a gratuity of one year's pension is granted.

The parents of dependent nursing men are granted pensions if (1) the parent was dependent on the man (dependency pension), or (2) if the parent is wholly or partly incapable of self-support, and is in pecuniary need, or (3) if the son was unmarried, and no pension is being paid in respect of a child or dependent, and the son was under 20 when he joined up, i.e. a first time pensioner. Dependency and need pensions are up to 50s. per week.

The following table shows the extent of the work of the Ministry in 1961:

[illegible]

Persons are paid as detailed
making men, and to the extent
of those listed, in need of
the Allied countries in the British
and American.

Persons in Greater Danger

Australia granted a bonus of per cent. from 1914-16, and under them the bonus doubled within a few years. 57s per annum, if married, 49.7, and 42s for the first and 33s for each child after the second under the age of 16; widows receive 55s. Canada's provisions under 1916-17 provide 112s. or, for the married, 114s. with 27s. for each child under 16 and 17s. under 15 years; widows 50s. 4d. per week, plus a bonus on basis of 7s. 6d. New Zealand gives 114s. to the married, 116s. and 27s. for each child under 16; a widow 5s. 6d. plus 113s. 2s. a week to widows and 113s. for the first child. The U.S.A. for the Act of 1917 gives the married 27s. or, if married, 1112; widows receive 50s.

France in 1801 granted a war pension of £24, and £12 per annum, but in 1802 a new Act raised the weekly pension to £74, and was reduced to the £4. In 1803 the demand for the resources of the treasury, a soldier with two children received £25, and £2 for each child after the demand order is given. The pension made her orders of pensions in 1806 at £36 to £65, according to the nature of the demand. In 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 24

Pensions, Mystery of—The Department of the British Government. It was formed in 1918 to deal with the payment of pensions to sailors, soldiers and their dependents. It took over from the War Office and various bodies the payment of pensions and grants mainly for the war. Making the various pensions of the regular soldiers and sailors as before, to the Admiralty and War Office. The minister has a salary of £2,000 a year, and the head offices are at 2, Sanctuary Buildings, Westminster, London, S.W., and the main offices are at Abingdon, W.

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